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DEVELOPMENT DIGEST

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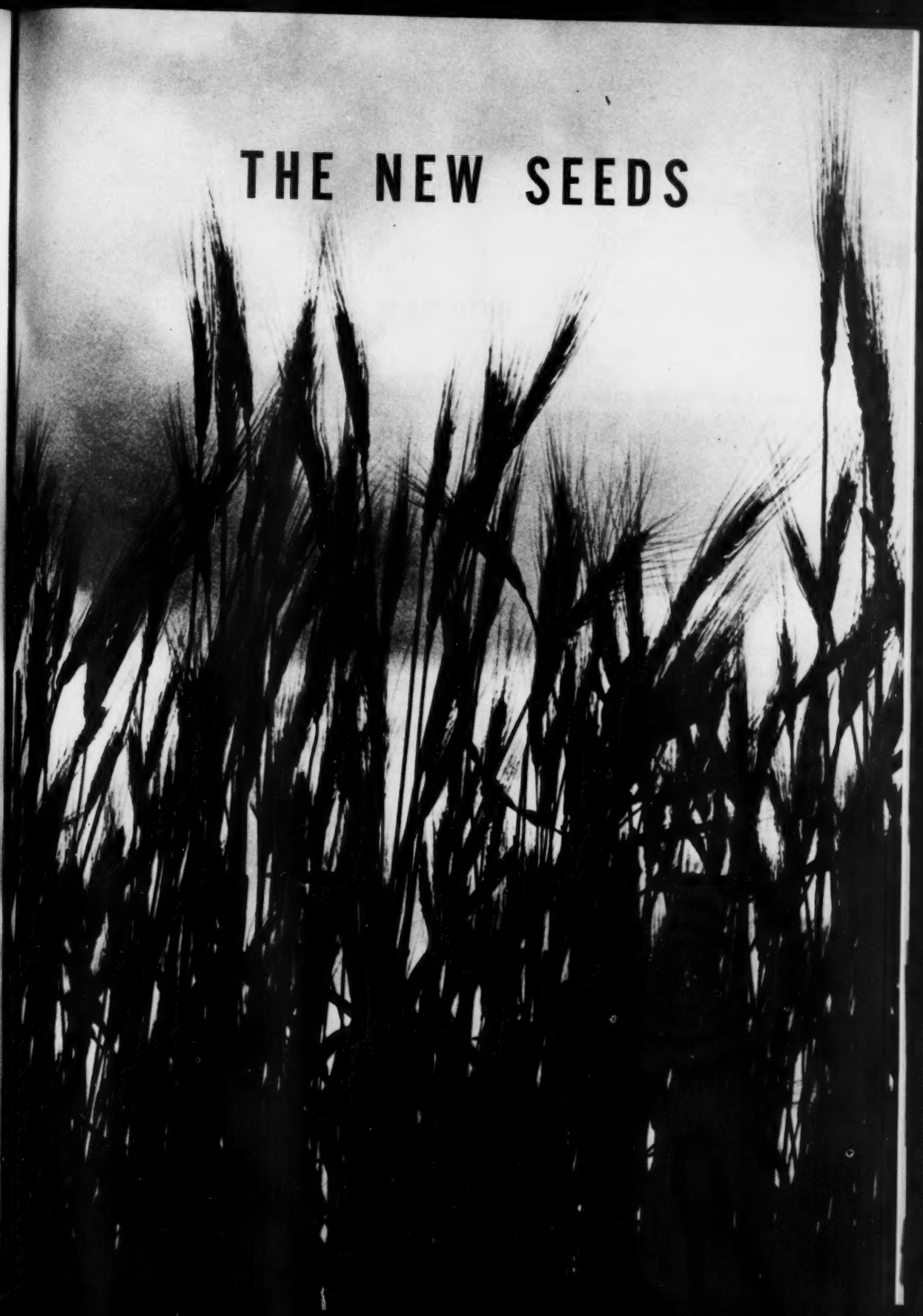
THE NEW SEEDS



WHEAT FIELD.
(PHOTO: U. S. DEPARTMENT OF AGRICULTURE.)

NEW SEEDS: THE GREEN REVOLUTION

William S. Gaud

[The hybrid seeds that are changing the face of many countries from Mexico to Taiwan contain the makings of a new revolution that can be as significant and as beneficial to mankind as the industrial revolution of a century and a half ago.]

Record yields, harvests of unprecedented size, and crops now in the ground demonstrate that throughout much of the developing world—and particularly in Asia—we are on the verge of an agricultural revolution:

--- In May 1967, Pakistan planted 600,000 acres to new high-yielding wheat seed. This spring, the farmers of Pakistan will harvest the new wheats from an estimated 3.5 million acres. They will bring in a total wheat crop of 5 to 6 million tons—a new record. Pakistan has an excellent chance of achieving self-sufficiency in foodgrains in another year.

--- In 1967, the new high-yielding wheats were harvested from 700,000 acres in India. This year they will be planted to 6 million acres. Another 10 million acres will be planted to high-yield varieties of rice, sorghum, and millet. India will harvest more than 95 million tons of foodgrains this year—again a record crop. She hopes to achieve self-sufficiency in foodgrains in another three or four years. She has the capability to do so.

Mr. Gaud is Administrator of the U.S. Agency for International Development, Washington, D.C.

--- Turkey has demonstrated that she can raise yields by two and three times with the new wheats. Last year's crop set a new record. In 1968, Turkey will plant the new seed to one-third of its coastal wheat-growing area. Total production this year may be nearly one-third higher than in 1965.

--- The Philippines has harvested a record rice crop with only 14 percent of their rice fields planted to new high-yielding seeds. This year more land will be planted to the new varieties, and the country is clearly about to achieve self-sufficiency in rice.

These and other developments in the field of agriculture contain the makings of a new revolution that can be as significant and as beneficial to mankind as the industrial revolution of a century and a half ago. To accelerate it, to spread it, and to make it permanent, we need to understand how it started and what forces are driving it forward.

Good luck—good monsoons—helped bring in the recent record harvests. But hard work, good management, sound agricultural policies

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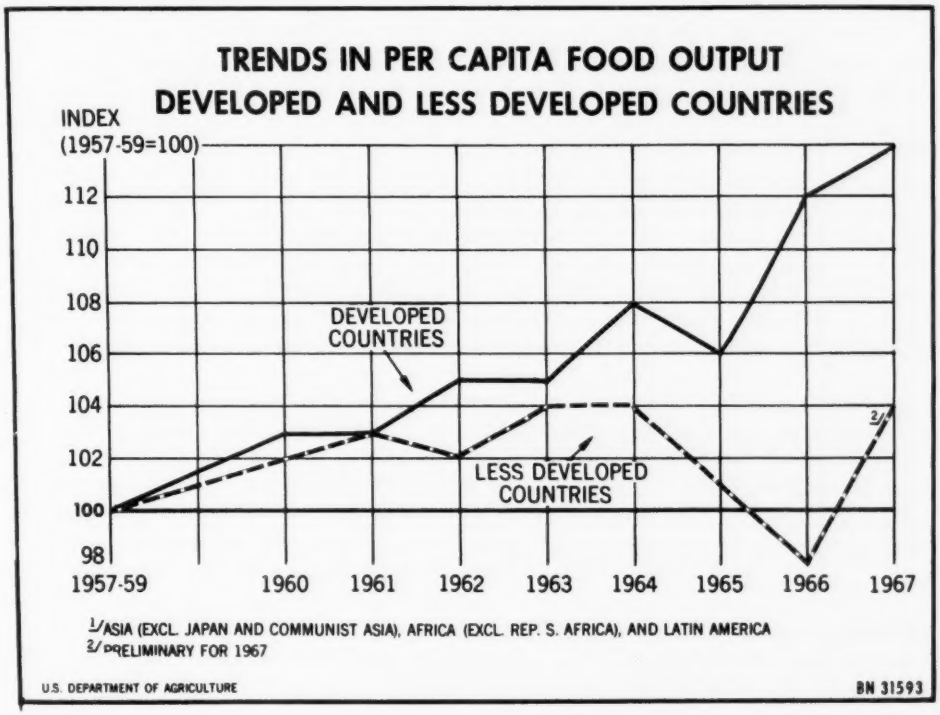


These and other developments in the field of agriculture contain the makings of a new revolution that can be as significant and as beneficial to mankind as the industrial revolution of a century and a half ago. To accelerate it, to spread it, and to make it permanent, we need to understand how it started and what forces are driving it forward.

Good luck—good monsoons—helped bring in the recent record harvests. But hard work, good management, sound agricultural policies

in the developing countries, and foreign aid were also very much involved.

High-yielding Seeds

Today's developments have been more than a few seasons in the making. Twenty-five years ago, the Rockefeller Foundation began its highly successful work to strengthen wheat production in Mexico. The Foundation concentrated next on rice, the most important crop in the world. More people eat rice than any other food. Over 90 percent of the billion and a half people of Asia live mostly on rice, and about 80 percent of them spend most of their time growing it.

In 1962, the Rockefeller and Ford foundations established the International Rice Research Institute at Los Baños in the Philippines. Their object was to develop new varieties which would increase rice production in countries such as India, Thailand, Pakistan, the Philippines, Cambodia, and Laos—countries where rice was important but yields were low. The Institute canvassed the world for samples of rice seed, looking for varieties to cross in order to form the hardiest, most adaptable, most nutritious strain; 10,000 varieties were collected. Peta, a tall Philippine variety which originated in Indonesia, was crossed with a short variety from Taiwan, Dee-geo-woo-gen. The result was named IR-8. By 1966 it was fully developed.

IR-8 has a stiff, strong, short straw. It does not fall over, or lodge, when the plant is heavily fertilized or when it is buffeted by wind and rain. It matures quickly, allowing for two—sometimes three—crops in a single year. Some call it the "miracle rice." Under favorable conditions, each planting yields four to six times as much as most traditional varieties.

High-yield varieties of wheat, maize, sorghum, and millet have also been developed in recent years. The best known and most important of these are the "Mexican wheats" developed by the Rockefeller Foundation, which have quadrupled Mexican yields from 11 to 40 bushels per acre.

It is a long way, however, from breakthroughs in laboratories and test fields to the record crops now being harvested by tens of thousands of farmers in half a dozen or more countries. Transforming the new seeds into food for millions of mouths requires many things.

To begin with, of course, there must be a will for improvement in the developing countries themselves. Given this will, the people

of the developing nations can put the new seeds, fertilizer, and pesticides to work. And their governments can provide the credit, price incentives, and market that will begin to change their lives.

But the developing nations—their governments, their institutions, and their farmers—cannot sustain this Green Revolution without outside support. They lack the skills to do the necessary adaptive research. They lack the foreign exchange to import fertilizer. They lack the capital to build fertilizer plants. They lack the facilities and the technicians needed to train their people in the new ways. If this agricultural revolution is to succeed, it can only do so as the result of a working partnership between the advanced and the developing nations.

Prospects

New inputs and infrastructure, new attitudes, adequate farm credit, and sound policies—these are the active ingredients of the Green Revolution. And they are paying off. World agricultural production in 1967 set a new record, and the less developed countries accounted for most of the increase. Total agricultural output in the developing nations rose by 7 to 8 percent over 1966. Per capita food production increased by 6 percent.

This year, an estimated 16 million Asian acres are being planted to the improved varieties. Next year, the total could be 30 to 35 million acres or more. The world is on the brink of an unprecedented opportunity. The critical food problem of the next twenty years can be solved. A growing number of developing nations are now moving to solve it. The question is whether this promising state of affairs will continue—whether the growth of food production in the developing world will continue to accelerate, whether this burgeoning agricultural revolution will become a part of the permanent order of things.

[Excerpted from "The Green Revolution: Accomplishments and Apprehensions," a speech delivered at the 10th Annual World Conference of the Society for International Development, Washington, D. C., 8 March 1968, 15 pp., mimeo.]

RESEARCH PROGRAMS ON THREE CONTINENTS

G. F. Sprague

[The crucial role of research in improving crop yields is illustrated by three internationally supported programs—the International Rice Research Institute in the Philippines, the Mexican wheat program, and the Kenya Maize Improvement Scheme. But other conditions are required if the program is to be a success, among them favorable government policies.]

The recent increased yields of the three most important food crops in the less developed countries build on a history of rapid yield increases through research in such developed countries as Japan (for rice) and the U. S. (for wheat and corn). But although basic principles know no geographical boundaries, the practices flowing from agricultural research have strong ecological limitations. When grown in Kenya, a hybrid from the U. S. Corn Belt may be inferior to a local unimproved variety. A fertilizer regime suited to southeastern United States may be quite inappropriate in Nigeria. Improved crop varieties and management and cultural practices suitable for the developing countries must be developed through locally conducted research. Thus, credit for current increases must go to a number of internationally supported local research programs.

International Rice Research Institute

The International Rice Research Institute, at Los Baños, the Philippines, may represent the most extensive effort yet made within a developing country to study all factors affecting production of a single crop.

Mr. Sprague is Research Agronomist at the Crops Research Division, U. S. Department of Agriculture, Beltsville, Maryland.

The Institute, founded in 1961, is jointly sponsored by the Ford and Rockefeller foundations. Its senior staff of approximately twenty scientists represent all the major areas which affect production capabilities—genetics and breeding, physiology, pathology, soil science, agricultural engineering, entomology, crop production, management and rotations, economics, and extension. It became apparent almost immediately that neither the technology nor the varieties developed in Japan or the United States were suited to tropical regions.

Marked progress has been achieved in several areas. Information has been accumulated on growth form, on efficient utilization of sunlight, on short-statured types with erect leaves, and on the minimizing of shading effects. Damage caused by the major insect pests has been materially reduced through the use of insecticides and insect-resistant plant varieties. In some experimental plantings, control of the stem borer with the insecticide gamma-BHC has given yield increases of 150 percent. Extensive screening within the world rice collection maintained at Los Baños has revealed types resistant to some virus diseases, to leaf blight, to certain strains of rice blast, and to other important diseases. Resistance is being incorporated into high-yielding types. Striking increases in yield have been achieved through nitrogen fertilization. In some instances the return on investment in fertilizer has been as high as 600 percent, assuming that nitrogen costs about four times as much per kilo as paddy rice.

Opportunities for growing two or more crops of rice per year depend on the availability of water and the growth requirements of the varieties used. The early short-statured varieties are well suited for this purpose. Where water is limiting, sorghum, mung beans, and other short-season crops may follow rice. Some form of multiple cropping appears to offer great promise for increasing total production.

Perhaps the most striking result to date has been development of IR-8. This short-statured type has many of the characteristics desired, and has given yields of over 10 metric tons of rough rice under conditions in which the tall Oryza indica types produced less than 6 tons. Yields of IR-8 have also been high in experimental tests in Pakistan, Thailand, Malaysia, and India—in some cases double those of local varieties. Production of IR-8 seed has been increased, so that additional comparative trials may be made and plantings started in these countries. At the same time, work on breeding is going forward in an effort to incorporate greater resistance to disease, improved milling characteristics, and improved quality in the rice.

Rockefeller Agricultural Program in Mexico

A research program involving Rockefeller Foundation and the Mexican Ministry of Agriculture was started in 1943. This was a broad-based program, designed to improve the agriculture of Mexico and to provide an opportunity for the training of Mexican scientists who would eventually assume leadership of all phases of research. The operation has been so successful that it has served as a model for other assistance programs. Although this program was initiated with several crops, I will consider only its most successful phase—wheat research.

In 1943, when the program was initiated, Mexico imported half of the wheat it consumed. At present, in spite of a high rate of population increase, Mexico is a wheat-exporting nation. The progress achieved is shown in Table 1.

Table 1. The Impact of Research on Wheat Production in Mexico

Year	Cultivated area (hectares)	Yield (kg/ hectare)	Production (metric tons)
1945	500, 000	750	330, 000
1950	625, 000	900	600, 000
1955	790, 000	1, 100	850, 000
1960	840, 000	1, 417	1, 200, 000
1964	846, 000	2, 600	2, 200, 000

Source: N. E. Borlaug, Phytopathol. 55, 1088 (1965).

This increase in production has been achieved through a combination of research developments in several disciplines: genetics and breeding, soil fertility, irrigation management, plant pathology, entomology, and cereal technology. Extensive use was made of known sources of resistance to stem rust and stripe rust, the main diseases, and new sources were identified. The first of many improved varieties was released in 1947. A succession of new varieties followed, each superior in productive capacity to those it replaced. The most spectacular developments have been achieved in recent years with the release and rapid adoption of several semi-dwarf varieties.

As is often the case with new varieties, the maximum utilization of genetic potential can be achieved only through a complete reevaluation of production practices. The new semi-dwarf types could make

effective use of up to 140 to 160 pounds of nitrogen per acre. Similarly, under the heavy cropping practices followed, applications of 40 pounds of phosphoric acid became profitable. Four irrigations were required where two had previously been adequate. With this combination of improved varieties and modified management practices, yields of 80 to 100 bushels per acre were achieved. This is in contrast to the 7- to 10-bushel yields that were common with the varieties and cultural practices used in 1943.

In addition to increasing total production, the Mexican program has made other outstanding contributions:

1. The new varieties developed in this program are relatively insensitive to day length and therefore exhibit wide adaptability. One strain, called Mexipak, is currently being grown extensively in Pakistan.

2. Where stem rust is a serious problem, new varieties resist rust for approximately five years, after which time a new race of rust, to which the variety is susceptible, becomes predominant. The concept of controlled backcross derivatives (multilineal varieties) was developed, in which each component of the mixture would possess resistance to a different race or constellation of races of rust. Practical results with the method have been satisfactory. Recently, the concept has been extended to include hybrid seed production, when this becomes feasible in wheat.

3. Techniques for early-generation testing of gluten quality, which should simplify the evaluation of quality, have been developed.

Important as these developments have been, they are probably overshadowed by the extensive training aspects which have been an integral part of the program. Between 1943 and 1963, more than 700 young men and women, representing many different countries, received in-service training. Many of them received advanced degrees and are now contributing to agricultural progress in their respective countries.

Maize Improvement in Kenya

The maize-improvement program of Kenya provides a striking illustration of the genetic improvement that is possible when other technological requirements are met. Support for this program is provided by the Kenya Government, the Kenya Maize and Produce Marketing Board, the Ministry of Overseas Development (Great Britain), the Rockefeller Foundation, and the United States AID-ARS Major Cereals in Africa Project. The research staff includes both geneticists and agronomists. Excellent and widespread extension support has been provided by the Kenya Ministry of Agriculture.

Begun in 1958, this is a conventional inbreeding-hybridization program based on use of the local variety, Kenya Flat White. By 1963 a double-cross hybrid which gave yield increases of 25 percent had been developed—roughly equivalent to that achieved in the United States with the first hybrids produced commercially.

During the early stages of the Kenya program it became apparent that lack of genetic diversity was limiting progress. Extensive introductions were thus made from the Western Hemisphere. The great bulk of this introduced material had to be discarded, but a few of the high-altitude types from Central and South America appeared worthy of further evaluation. This exotic material was crossed with the local variety and the resulting hybrids evaluated. One of them, Kenya Flat White x Ecuador 573, gave yields equal or superior to those of the double-cross hybrid, depending on altitude and fertility level. As the varietal hybrid possessed the greater potential for yield enhancement, breeding efforts were increasingly directed toward improvement of the two base populations.

Agronomic research had established optimum planting densities and planting dates, as well as efficient fertilization practices. The Ministry of Agriculture set up an effective demonstration program, showing the advantages of hybrids over the local variety of maize and the relative importance of the major management practices. The Kenya Seed Company, which had specialized in grass-seed production, was induced to undertake large-scale production and distribution of hybrid maize.

Hybrid seed was first offered under a package plan. Each purchaser of seed was obliged to buy fertilizer of the recommended formulation and amount, and to follow certain minimum cultural recommendations. The growing use of hybrid seed is shown in Table 2. Each year the acreage grown has been limited by shortage of seed rather than by lack of demand. After an initial lag, acceptance by the small-scale farmer has been as great as acceptance by the large-scale farmer.

This program involving use of hybrid seed, proper fertilization, and improved cultural practices has already had an important impact on total production. Further increases appear to be quite feasible.

Breeding programs such as the one in Kenya are admirably designed to fill both short- and long-range needs. Short-term needs are met by the rapid development and utilization of improved hybrids. Substantial improvement of the parental types is possible through simple selection schemes which pose minimum demands for trained manpower, financial support, or operational facilities. This improvement in the base parental populations increases their potential

Table 2. Acreages of Hybrid Maize Grown in Kenya

Year	Large-scale Farms (acres)	Small-scale Farms (acres)
1963	300	10
1964	27,000	3,000
1965	52,000	18,000
1966	50,000	50,000
1967*	100,000	350,000

*This projection is based on seed produced and seed orders currently in hand.

Source: AID-ARS Major Cereals in Africa Project, Third Annual Report.

value as sources of inbred lines, should a conventional inbreeding-hybridization program later become desirable.

Similar programs are feasible elsewhere. Varietal hybrids superior to the best available double crosses have been identified in Mexico, India, and Thailand, for example. But little commercial use is being made of such material. This appears to be partly a problem of seed-production capabilities but also one of status. Because single and double crosses constitute the hybrids of commerce within the United States and other developed countries, the developing countries feel that commercial utilization of heterosis should be deferred until they can market hybrids of similar types. Thus substantial, immediate, and potential progress is being sacrificed to prestige.

Requirements for an Effective Assistance Program

These examples of success need not be unique. The improved varieties cited are already being used extensively outside the area of their development. Similar programs could generate new types of these or other crops to satisfy different ecological requirements. A total increase in food production of 50 percent in the developing countries appears to be a completely realistic goal.

But a consideration of these programs suggests that significant progress requires fulfillment of certain minimum conditions. 1) A realistic system of research priorities must be developed. Under food-deficit conditions, emphasis should be given to one or two of the major food crops of the area. 2) Staffing must include research scientists representing several disciplines (genetics, agronomy,

plant pathology, entomology, and so on). The concept of "critical mass" in nuclear physics provides a useful analogy. A vigorous extension program must complement research activities. 3) The scientific staff must actively participate in research. Consultative and advisory functions have their place, but an adequate program cannot be developed on the basis of these alone. 4) Adequate financial support must be provided, much of it from abroad. 5) Provision must be made for the training of nationals. Such persons must be assigned responsibility as rapidly as their training and aptitude will permit. 6) Governmental policies must be favorable to agricultural development. Provision must be made for satisfying a wide variety of needs—adequate supplies of fertilizers and other agricultural chemicals, a realistic pricing policy for agricultural produce to make the adoption of improved techniques attractive to farmers, and policies which will permit the development of an effective seed production and distribution industry responsive to local needs, to name only a few.

The importance of the first five requirements is generally recognized. The necessity for the sixth is often overlooked. Achievement of increased agricultural productivity in the developing countries requires more than the improvement of crop plants and associated management practices. Favorable economic, political, and social conditions and policies also are essential.

[Excerpted from "Agricultural Production in the Developing Countries," Science. Washington (D. C.): American Association for the Advancement of Science, Vol. 157, No. 3790, 18 August 1967, pp. 774-778.]

WHEAT PRODUCTION PROSPECTS IN INDIA

Ralph W. Cummings

[Greater availability of new seeds and increased supplies of fertilizers are enabling the Indian farmer to carry out a revolution in agricultural production. The following estimates foreshadowed the record crops of the 1967-68 season.]

India now produces wheat on approximately 33 million acres. Of this, almost one-third, or between 10 and 11 million acres, is said to be irrigated. India has had a good wheat breeding program under way for many years and has available a rather impressive group of varieties with rust resistance and excellent performance under the conditions which prevailed previously. The wheat is of the spring type.

Generally speaking, a bold, amber-colored, semi-vitreous grain is preferred. Developed for use under low or moderate fertility conditions, and with the expectation that the straw would be an important product for cattle feed, the wheats were relatively tall and tended to lodge badly if moisture and fertility were high. They were fertilizer responsive at low levels of fertilizer application, but lodging was so severe that negative responses were often encountered if fertilizer application exceeded 30 to 40 pounds nitrogen per acre under irrigation. Average yields for the country, irrigated and non-irrigated, have been under 800 pounds per acre and yields above 3,000 pounds were exceptional under irrigation.

Dr. Cummings is Associate Director for Agricultural Sciences, The Rockefeller Foundation, New York.

The high-yielding-varieties program obviously required a new type of variety with a shorter, stiffer straw and much greater resistance to lodging. The search for such varieties has been greatly intensified in the wheat breeding programs in India during the last few years, and has been helped substantially by introduction and testing of varieties and by selection within a wide range of breeding materials introduced from Mexico.

After two years of intensive testing, the Government of India arranged in 1965 for the importation of 200 tons of certified seed of Sonora 64 and 50 tons of Lerma Rojo 64 to accelerate their seed production program. All of this was increased as seed for one season. The results were so promising, and demand for the new seed so great, that the Government of India in 1966 sent a team of three people to Mexico to buy 18,000 tons of Lerma Rojo seed. This, together with the quantity on hand from the previous year's increase, has permitted the planting of over 700,000 acres to these short wheats on irrigated land this season. Recommendations are for 100 pounds of nitrogen per acre for these wheats, and fertilizer supplies (both nitrogen and phosphorus) were directed into the same areas where the seeds were distributed. Reports to date indicate that the crop is doing well. Even with this quantity, the demand for seed exceeded the supply. After the 1966-67 harvest, seed supply of the short, fertilizer-responsive, wheat varieties should no longer be a limiting factor. There should now be sufficient seed to saturate the demand and to make a real contribution to India's bread needs.

These two varieties are red in color and not quite what the Indian farmer thinks he wants ultimately. They require a more sophisticated management to produce their maximum yield. Sonora 64, in particular, has enough susceptibility to rust attack to limit its area of adaptation to only a portion of the wheat growing area of the country.

Fortunately, other varieties are coming out of the selections being made by the plant breeders. Two, one of which has an amber grain color, are already released and under multiplication. Three others are in advanced test with probable release in 1967. Thus, we expect new and still better varieties to replace these present ones very soon.

Since seed supply will not be a limiting factor from now on, let us look at the fertilizer situation. This is not as easy to meet and requires more time. But India is not complacent here, either. Having started from virtually no chemical fertilizer use a few years ago, India now has synthetic nitrogen plants in production with a capacity of over 500,000 tons nitrogen annually and other projects negotiated and under way with a capacity for producing more than 1 million tons additional nitrogen annually.

The total amount of nitrogen (production plus imports) used in India in 1965-66 was about 650,000 tons. About 1 million tons were arranged for in 1966-67, but less (800,000-900,000 tons) is thought to have reached the farmers in time for this year's crop. Arrangements have been made for 1.45 million tons for 1967-68, and the target for 1970-71 has been set and agreed by the Planning Commission at 2 million tons nitrogen, 1 million tons phosphoric acid, and 400,000 tons potash. The Ministry of Food and Agriculture insists that the nitrogen supply target will have to be increased still further.

There is a revolution in agricultural production underway and an unprecedented excitement, not only among the scientists and planners, but among a rapidly growing segment of the farm population. Those who have not had direct on-the-scene contact with this phenomenon will find on revisiting India that they have to readjust their projections for the future. I have a high degree of optimism that India can and will balance its food budget within the next few years.

[Excerpted from a speech included in Wheat Quality Conference Report of the Crop Quality Council, Minneapolis, Minnesota, 8 February 1967, 6 pp., mimeo.]

DEVELOPING NEW WHEATS FOR TURKEY

Warren E. Kronstad

[The new varieties of wheat developed in Mexico show great promise —but only if further research adapts them to Turkey's varying climatic regions, soil conditions, and so forth.]

A plant breeder strives to adapt plants to the growing conditions of a specific area so as to obtain maximum yields. He must develop plants which are resistant to such limiting factors as, in the case of wheat, weak straw, diseases and insects, or perhaps environmental conditions such as low temperatures.

Turkey has taken a bold step forward in attempting to increase wheat yields by introducing large amounts of the new varieties developed in Mexico and the Pacific Northwest region of the United States. When grown under proper cultural practices, they should markedly increase yields. However, before maximum yields can be obtained with these genetically improved wheats, a great deal of information must be obtained through research conducted in Turkey. The major objective will be to determine how well these new wheats are adapted to conditions in this country and to determine what cultural practices will be necessary to obtain high yields.

In Turkey there are many different climatic regions, varying from the mild winter and warm summers found along the Mediterranean Coast to the cold winters and warm summers observed on the Anatolian Plateau. Since a wheat variety is developed to fit a specific environment, it will be necessary to test a

Dr. Kronstad, a Plant Geneticist, is part of an Oregon State University team currently helping to improve Turkish wheat.

large number of varieties in several locations so as to determine which variety will be best adapted to a specific region. This is the reason 23 different wheat varieties are being introduced for testing.

Furthermore, the cultural practices needed to produce maximum yields in one area may be entirely different from those needed in another area. For example, along the Mediterranean coast near Adana, one of the major problems will be to remove excess moisture from the fields during the winter months. This is in direct contrast to the conditions found on the Anatolian Plateau, where cultural practices will have to be employed to conserve as much moisture as possible due to the low annual rainfall.

Mexican wheat (left) compared to the Turkish Florenza variety

In addition, experiments will have to be conducted to learn more about how to manage these new wheats. Fertilizer studies will have to be designed to obtain information for such factors as when to apply the fertilizer, in what amounts, and what types of fertilizers should be used. Other studies will involve such factors as weed control, rates and dates of seeding, moisture utilization, and any other condition which might influence the final yield of grain. Since large quantities of these new wheats will be planted this fall, there is an air of urgency regarding such information.

Once this type of information is available and the plant breeders can determine what the limiting factors are in Turkey for these new wheats, additional improvement can be made through varietal development. Perhaps by hybridizing some of the new high-yielding semidwarf wheats with the native wheats, a new variety can be selected from the progeny which will be high-yielding and can tolerate the high moisture conditions found in many of the coastal areas. Certainly a continued effort to increase wheat production must be made.

[Excerpted from "Development of New Wheats for Turkey," Participant Journal. Ankara: U. S. Agency for International Development and the U. S. Information Service, Vol. 6, No. 27, July 1967, pp. 72-75.]

DO-IT-YOURSELF RICE KITS

The USAID Mission to the Philippines

[Combining the necessary inputs—seeds, fertilizer, pesticides, and instructions—to prove the value of IR-8 rice on a small scale (one-fifth or one-tenth of a hectare) was a brilliant stroke. Farmers who buy the rice kit one year average a tenfold increase in plantings the next.]

In most cases, Filipino farmers are cautious and conservative. To persuade them to try IR-8 on a large area would have been very difficult, mainly because it involved the risk of a great sum of money. An investment of ₱800 [₱3.89 = $1] per hectare for a variety that they had never grown was frighteningly large for the average Filipino farmer, whose entire annual income from rice farming had probably never equalled this amount. However, even though he has a natural conservatism, the farmer is used to taking risks—gambling on weather and markets. It was obvious that an opportunity must be provided for farmers to try IR-8 on a small scale. Thus, the idea of the do-it-yourself rice kit was born.

Another consideration that pointed to the need for rice kits was that all the IR-8 inputs the farmer needed—seeds, fertilizer, pesticides, and instruction booklet—could be assembled in one package, in the correct quantities, so they could be used at the correct time. Supervised credit was also provided. The Filipino farmer had never had such a completely packaged opportunity before. He may have been able to get good seed when the proper credit was not available. Or a crucial input such as fertilizer may not have come on time, or the wrong kind of pesticide may have been furnished. The rice kit—a complete package—eliminated such logistical problems.

Under the sponsorship of USAID, IR-8 rice kits were prepared containing all of the agricultural supplies needed for the scientific cultivation of IR-8 on 2,000 sq. meters (one-fifth hectare). Included in the kit were:

6	kgs. of IR-8 seed
16.6	kgs. of Lindane (for stem borer control)
1	kg. of Sevin (for leafhopper control)
44	kgs. of urea fertilizer (45% nitrogen)
1	kg. Alferin (rat poison)
1	instruction booklet

The step-by-step instruction booklet was prepared in cooperation with the International Rice Research Institute (IRRI) and was printed in the farmer's dialect.

Not only did these kits give the farmers the opportunity to try IR-8 on a small scale; they also provided a means by which supervising agricultural technicians could teach farmers about modern rice-culture practices. Since the kits contained all the needed inputs, it was easy to convince farmers to utilize the correct amounts supplied. There was no additional expense involved, and the farmer was spared the effort of trying to locate every input himself.

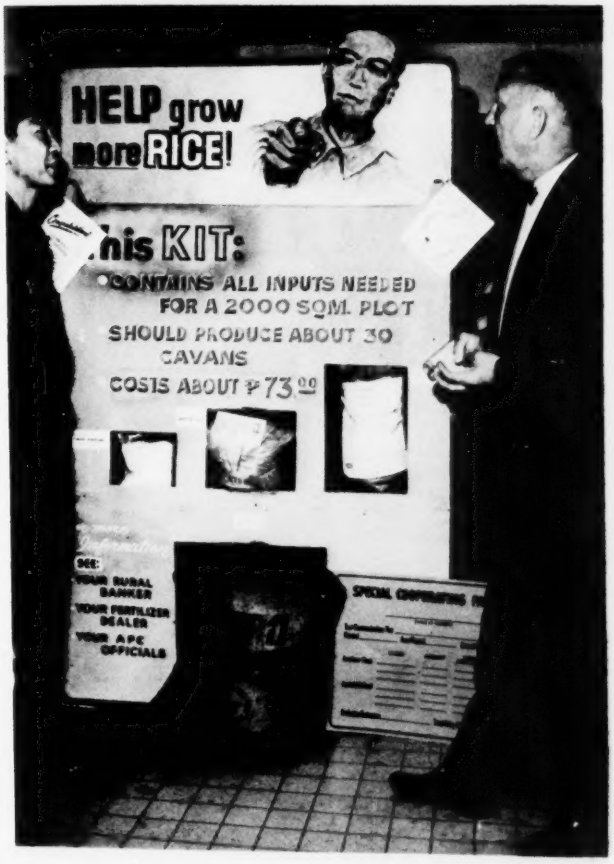
The first 100 rice kits, paid for by USAID, were sent to the province of Pampanga in December 1966. These kits were made available to farmer cooperators through the rural banks which were making loans from the government's Agricultural Guarantee and Loan Fund (AGLF). As with regular AGLF loans, the actual farming was supervised by specially trained agriculturists. The farmers signed promissory notes to pay the ₱70 cost of the kit after harvest. It was important that the farmer agree to pay for the kit and that he not consider it a subsidy or gift: He had to learn not only the agronomical factors involved, but the cost/benefit relationship of planting IR-8.

As interest grew, 600 more IR-8 kits were ordered. One hundred each were sent to the provinces of Pangasian, Nueva Ecija, Iloilo, Isabela, and Camarines Sur. At harvest time, average yields for the kits in these provinces ranged from 133 to 142 cavans per hectare [1 cavan = 44 kilograms or 97 pounds], against an average yield of 30 cavans per hectare with traditional rice seed.

A sample kit and display board were provided to Malacañang (Office of the President), the Commissioner of Agricultural Productivity, the Rice and Corn Production Coordinating Council, the Catholic Relief Service, various farmer cooperatives, five leading national newspapers, the Union Carbide, and the Atlas and ESSO Fertilizer and Agricultural companies. At the request of the organizers of the

Catholic National Congress on Rural Development held in early 1967, the kit and display board were placed in a prominent location in the auditorium where the Congress convened its first meeting. The novelty of the display attracted almost more attention than did the agenda of the Congress. The display was visited by church dignitaries, the Vice President of the Philippines, and the First Lady, Mrs. Imelda Marcos. When he heard about it, the President himself was so delighted with the kit idea that he asked that similar displays be made available in all the major rice-producing areas of the Philippines. (Below: President Marcos with USAID Director Haraldson.)

The idea of IR-8 rice kits became increasingly popular. In February the National 4-H Club of the Philippines asked for help in preparing 500 IR-8 rice kits designed for 1,000 sq. meters (one-tenth hectare). These were distributed to 4-H members throughout the country. Seeds and instruction booklets for the 4-H kits were donated by USAID. Insecticide was donated by the Union Carbide Company of the Philippines; the Atlas Fertilizer Company advanced the fertilizer as a loan to the 4-H Club. The kits sold for ₱40 and were paid for by the young farmers after they harvested their palay (unhulled rice). The fertilizer loan was paid back, and the balance of the money went to the National 4-H Club's agricultural fund. The kits yielded a computed average of 150 cavans per hectare and were considered so successful that the Club distributed 500 more kits for the 1967-68 rice season.



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the U.S. Embassy after severe floods had destroyed most of the newly planted rice in the province. The proceeds which accrued to the provincial government from sale of the kits were used to set up a revolving agricultural development fund. The province of Laguna, too, sold 50 of its own kits, using IR-8 seed which had been propagated within the province.

As the demand for kits increased, commercial agricultural supply companies began to market their own kits. By the end of 1967, the ESSO Fertilizer and Agricultural Chemical Company had sold over 8,000, each for 2,000-sq. meter plots, through more than 400 ESSO AgroService stores located all over the Philippines. Between April and September 1967, the Atlas Fertilizer Company sold over 5,000 of the smaller kits through their country-wide chain of distributors. The average computed yield per hectare for Atlas kits is 130 cavans.

The Presidential Arm on Community Development has recently gone into the IR-8 kit business and has distributed more than 5,000. Thus, from the first 100 kits ordered by USAID in December 1966, the total number of kits sold in the country is now more than 22,000. Reports show that the IR-8 kits have accomplished every purpose for which they were created. Farmers have been so convinced of the performance of IR-8 that the average farmer who planted a 2,000 sq. meter IR-8 kit during one season, plants two hectares of IR-8 the following season—a tenfold increase.

[Excerpted from The Philippine Story of.... IR-8, AGLF, and Do-It-Yourself Rice Kits, prepared by the USAID Mission to the Philippines.]

THE SEED BUSINESS

U. S. President's Science Advisory Committee

[Successful research on new seeds is valueless to the farmer unless he is able to obtain the seed at fair prices, in sufficient quantity, and in time for planting. Seed processing and distribution is a specialized business, but not so capital intensive or technologically sophisticated as to be beyond the reach of most developing countries.]

Once new, high-yielding seeds for agricultural and horticultural crops are developed, they must be multiplied and distributed to the farmer if they are to have any impact on agricultural production. Each species, and even variations within a species, requires special skill, knowledge, and equipment. In some countries, private enterprise is the main outlet in the seed trade. In others, distribution by cooperative societies, governmental agencies, or direct distribution from farmer to farmer is important.

Several factors are unique to the seed business, whether private or public. First, the production of seed is characterized by an inflexible time lag—at least four years in the case of hybrid corn (one year each for increase of inbred lines, making single-cross parents, producing final cross, and distribution to the farmer) and two years or more for open-pollinated varieties where field crossing is not required. Careful judgment must be exercised as to the amount and pedigree of a particular variety or hybrid chosen for increase of seed, as there is relatively little a seedsman can do to increase the volume after the program has been started.

The Committee's study includes both a report by the Subpanel on Manufactured Physical and Biological Inputs, John F. Kincaid, Chm., and a resource paper prepared by Richard F. Holland, of the DeKalb Agricultural Association, Inc., DeKalb, Illinois.

A second important feature of seed production is the necessity of performing technical tasks—detasseling corn, roguing cereals, pruning vegetables—at definite times during the growing season. The timing of these critical steps is dependent on uncontrollable environmental conditions, but they must be done regardless of rain, cold, or holidays. Seed is produced by growing plants, and there is no second chance for any particular operation.

In addition, every crop species has its own unique and exacting demands, with which the seedsman must be familiar. Most vegetable seed, for example, must be produced under specific day-length and temperature conditions; if these conditions are not met, the plant will not flower. Harvesting procedures frequently present special problems in small seeded crops, such as grasses; special machines have been developed to permit mechanized harvesting of many of these species. In tuberous crops, the storage conditions for seed tubers are critical; light, temperature, and humidity must be controlled.

Seed is a semi-perishable product and care must be exercised in its storage and distribution. To maintain high quality and capacity for germination, seed is usually produced in areas with low relative humidity, which may necessitate production of seed some distance from the area of actual use. Vegetable seed production requires special environmental conditions, and vegetable seeds frequently are transported long distances. Usually one crop a year is produced, which gives a 12-month cycle between planting and use of seed and ties up the capital of the seed handler for long periods. Seed is bulky and has a relatively low value per pound, which tends to discourage seed production for export.

Seed is also unique in that its appearance cannot be used as an indicator of quality. The farmer develops a preference for particular varieties through knowledge gained from public and private extension efforts, test plantings in the area, etc. However, he has no way of knowing when he buys the seed whether the producer did a professional job in critical production practices and avoided mixtures with other varieties in the cleaning and bagging operations. A great deal of faith must be placed in the seed handler, because results will not be known until the crop is grown. In most countries, certification and labeling laws have been established to protect the consumer against fraud.

A Global View

Equipment for handling and processing seed is not too complicated, and simple machinery can be made available quite rapidly. In many cases the necessary equipment is already available in the

developing countries. A medium-sized initial investment is needed for starting a seed plant, but adequate long-term financing is essential, since capital turnover is slow.

We have estimated that, in the three developing continents of Asia, Africa, and Latin America, almost 1,000 seed processing plants will be needed by 1985, with each plant having an annual capacity of 3,000 metric tons. This estimate is based on the assumption that, if 50 percent of the cropland in any given area is properly planted with improved seed, it is reasonable to expect a 50 to 100 percent increase in yields for the entire area. (Of course, it must be emphasized that this yield improvement does not result solely from use of improved seed, but is dependent on improved practices of all kinds.) If 25 percent of the seed required is supplied by seed organizations outside the farm where the seed is to be used, it would be reasonable to expect this 50 percent coverage to be achieved, since farmers typically save and trade a large amount of seed among themselves. Table 1 gives an estimate of the number of plants, their cost, and the value of their output if 25 percent of the total seed requirements—estimated at over 2 million tons a year—were to be provided commercially in Asia, Africa, and Latin America, as well as Europe and Oceania, where at least 85 to 90 percent of the land is already planted with improved varieties.

TABLE 1.—*Number of plants, capital expenditures, and operating costs for supplying seed of cereals, oilseeds, and pulses for 10%, 25% and 50% of the area shown*

[Capital costs and operating expenditure are in millions of U.S. dollars]

	10 percent			25 percent			50 percent		
	No. plants[1]	Capital[2]	Annual Operating[3]	No. plants	Capital	Annual Operating	No. plants	Capital	Annual Operating
Latin America	90	15.8	97.2	225	39.4	243.0	450	78.8	486.0
Asia	430	89.9	423.1	1,075	224.6	1,057.8	2,150	449.4	2,115.6
Africa	70	14.6	66.2	175	36.6	165.4	350	73.2	330.8
Europe	370	83.2	288.6	925	208.1	721.5	1,850	416.2	1,443.0
Oceania	30	6.8	22.6	75	16.9	56.5	150	33.8	113.0
Total	.....	.....	.....	.....	.....	.....	.....	1,051.4	4,488.4

[1] 3,000 metric ton annual capacity.
[2] Initial cost of plant (20-year life expectancy).
[3] Cost of labor, seed, bags, tags, upkeep, 15 percent profit, marketing, distribution, and administration.

Approximately $200 million will be required to construct plants in developing countries, and the annual value of output will be about $1,000 million. While this capacity is in addition to that now in existence, the difference between additional and total capacity is small, since only a small percentage of the cropland in these countries is now in improved varieties, and an even smaller percentage of the seed requirement flows through commercial channels.

In Table 2, the actual costs are given for processing plants erected by the DeKalb Agricultural Association in India and Argentina, with a capacity of 3,000 and 5,000 metric tons respectively. These are small plants, but large enough to operate efficiently. Land costs, which are a major factor in the capital outlay for a seed processing plant, are extremely high in India. Otherwise, the cost for building, machinery, and equipment are comparable in the two countries.

TABLE 2.—*Cost of seed processing plant*

[U.S. dollars]

	India (3,000 metric tons capacity)	Argentina (5,000 metric tons capacity)
Land	$20,000	$2,500
Buildings	92,900	106,600
Machinery and equipment	95,600	113,931
Total	208,500	223,031

As for annual running costs, we have calculated the comparative costs of producing hybrid corn and a synthetic variety of corn in three countries. Part of the data are derived from actual experience, while some are calculated from market price and an estimate of the extra cost of production, certification, and handling. In the calculations, a figure representing 15 percent of sales has been added for educational activities and profits. Educational activities include the cost of demonstration plantings and advisory services for improved cultural practices.

The interest charges in Table 3 are based on a rate of 8 percent to cover the capital tied up in seed purchased from the contract seed grower and not yet delivered to the farmer. In most developing countries, however, it is very difficult to obtain capital at this rate; bankers will typically ask 20 to 25 percent because of inflationary pressures.

The costs and ratios in Table 3 should be considered minimum figures. No attempt has been made to include the important expenses of adaptive research, if this is to be performed by the seed firm, or the cost of "getting started," including expenses for obtaining the capital required to build the processing plant in the first place. As a rule, research expenditures should be about 10 percent of the value of the seed. Additional "getting started" expenses would be incurred in building research facilities and to purchase land for research and development work.

TABLE 3.—*Examples of seed costs for hybrid corn and corn variety for three countries*

[U.S. dollars per metric ton]

	India		Argentina		Italy	
	Hybrid	Variety	Hybrid	Variety	Hybrid	Variety
Production and warehousing	216	160	150	68	168	116
Marketing and distribution	71	71	40	40	96	96
Educational activities and profits (15%)	48	39	35	23	43	36
Interest (purchase of raw seed and storage—6 months)	9	6	6	3	7	5
Losses in storage, breakage, misc (5%)	10	8	8	3	8	2
Overhead (taxes, administration, licenses)	30	30	44	44	31	31
Total	384	314	283	181	350	286
Ratio—market price: seed price	1:4	1:3	1:7	1:4	1:5	1:4

The ratio of market price to seed price could increase to 1:7 or 1:8 for hybrid crops and 1:4 or 1:5 for non-hybrid crops when all costs are included, but the ratios shown in Table 3 are typical of many private and cooperative seed enterprises. A ratio of market to seed price is, of course, greatly influenced by the market price of the crop, but the ratio could be low and still provide an adequate profit for the seed firm.

In addition to capital, a successful seed industry will require technical manpower—college graduates or equivalent. Agricultural universities must, of course, train men in the basics of agronomy. This done, the specialized knowledge needed to produce and distribute seed can be acquired rather quickly and easily. About nine technical men would be needed for each 3,000-ton plant, or almost 10,000 such individuals by 1985 if the estimated number of plants in less developed countries is built. This estimate does not, however, include the highly trained manpower required for research.

Seed companies in the developed nations could train technicians in a relatively short time in the basic operations of producing and handling both hybrid and open-pollinated seeds. This training would be most effective if conducted where the seed is produced. Private companies might be encouraged to start pilot seed installations in some of the developing nations with arrangements that as many people as possible be trained by the firm.

[Adapted from The World Food Problem: Report of the Panel on the World Food Supply, Washington (D. C.): U. S. Government Printing Office, September 1967, Vol. II, pp. 387-391 and Vol. III, pp. 122-128.]

WORDS OF WARNING FROM INDIA

[Hope, like despair, can grow fast. But maintaining the recent record yields in India will require continuing incentives to the farmer—especially in the form of high prices—continuing research, and adequate administrative support.]

FIRST.....

After two years of despondency, hopes are reviving that the country may at last have turned the corner in agriculture. Foodgrain output may total 100 million tons during 1967-68, which would represent an increase of about 11 million tons over the record of 1964-65. The figures would denote a rise of nearly 4 million tons a year in the production potential, thus belying to some extent the calculations of Indian and foreign experts who believed that for many years to come India's farm potential would not rise by more than 2.5 percent annually.

Hope, like despair, can grow fast. Knowledgeable people in the government and on the farms feel that the achievements of the last two years in raising the agricultural potential are merely the first small signs of a big revolution. Within a few years, the changes will spread to the whole country and foodgrain production will then increase at the rate of 10 million tons a year. That might seem almost a miracle. But a recent tour of various parts of the country, both in the north and in the south, has given this correspondent the impression that the "miracle" has in fact begun.

The farmers' efforts would have come to nought without the new high-yielding varieties of grain, whose yield is four times as high as that of the traditional varieties. Their popularity has to be seen to be believed. A tour through villages or small towns in Punjab, western Uttar Pradesh, or some progressive districts

of south India shows that farmers now have money to spend and to invest. They ride bicycles and tractors, carry transistor radios, own brick houses, and, what is most important, have the money required for modernizing their farms.

In the developed areas of the Indian countryside, one now finds farmers who are convinced that no profession is more paying than farming. It is no longer a question of having two lean meals a day, but of earning thousands of rupees from an acre of land. They know people who have done it. So they know that they can do it themselves. Suddenly farming has begun to mean to them a kind of industry which needs inputs. They are putting all their resources, including whatever they can borrow, into the farms in the confident hope that the investment will yield much more than they had ever imagined before. And such confidence among farmers is necessary to make the new agricultural revolution a success.

The Importance of Price Incentives

At every step in his operations, the farmer is faced with numerous obstacles, however. Official guidance to fight soil and plant diseases, to get the soil tested, to secure loans to buy machinery, seed, and fertilizers, and to market the produce at a profit, exists only on paper. The official machinery at the block and district levels is often inefficient and corrupt.

Whereas the government provides all kinds of direct assistance and incentives to industry, it gives little direct cash assistance to the farmer. Even the hope held out by the government of rushing to the farmer's help if prices slump is often illusory. Often recently, there were complaints from Punjabi farmers that the price of maize in the state had sunk below Rs. 400 a metric ton [Rs. 7.5 = $1], as against the procurement price of Rs. 550 per m.t. But the government did nothing, even though the price in the neighboring state of Haryana was Rs. 580 per m.t.

The farmer thus knows that before making the major investment in agriculture that the use of the new high-yielding varieties requires, he must make allowance for many factors. These include the unpredictability of the weather, the threat from pests and disease, the unhelpful attitude of the authorities, and the danger of prices falling in the event of a bumper crop. If the farmer has nevertheless been tempted to make the investment, it is because price levels have been high enough to cover the risks. No amount of appeals to patriotism, or talk of social control of land, could have yielded the spectacular results that have been achieved by farmers in certain areas through their own effort and enterprise.

The main way to help the spread of the farm revolution now is to allow food prices to remain high for a few more years. The government would be short-sighted if it let grain prices fall sharply because of overproduction. If necessary, it should buy up large quantities, over and above what it needs as a buffer stock, as a price-support measure. Zones should be abolished within a year to let farmers get the benefit of good prices from the start. The zonal system tends to depress grain prices in surplus states in the immediate post-harvest period. Subsequent lean-season price rises benefit the trader and not the farmer.

Once the rise in production gains momentum, food prices are bound to fall. This will promote general price stability in the economy. The aim is not to induce the farmer to produce more by giving him false hopes of permanently high prices, but to provide him with the wherewithal for development. This is the only way to help him to acquire the capital he needs to modernize his farm by buying machinery, fertilizers, seeds, and pesticides. Once the farms are modernized, special incentives will no longer be necessary. The farmer will be happy and contented with the profit he begins to make.

[Condensed from "The Outlook for Agriculture: Signs of a Major Breakthrough," Capital. Calcutta, Vol. CLVIX-3986, 16 November 1967, pp. 958-959.]

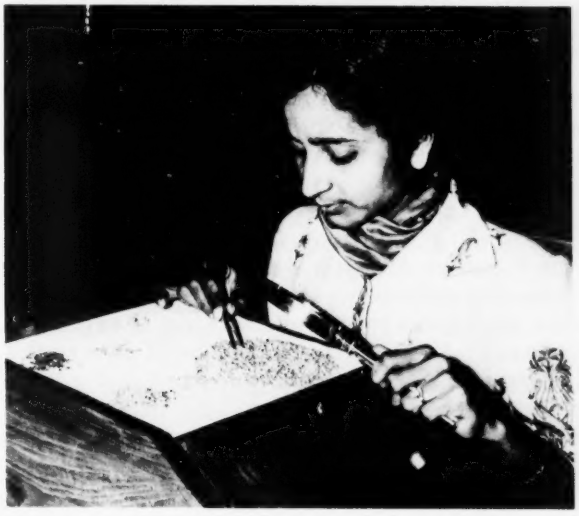
SECOND.....

With the advent of the hybrids of jowar, bajra, and maize and the new high-yielding varieties of wheat and paddy, a major breakthrough towards self-sufficiency in food has been achieved. It may seem that now all we have to do is to persuade as many farmers as possible to use these new varieties, see to it that they cultivate them properly, and watch our grain godowns fill. Unfortunately, this supposition is not valid.

We have also begun to realize that good seed of a good variety is not enough by itself but must be accompanied by pest control, land leveling, proper irrigation and drainage, and the use of fertilizers in order to realize its full yield potential.

Not a One-Shot Affair

Furthermore, plant breeding is not a one-shot affair. The search for a better variety is unending. But even apart from this, the reason why we cannot stop at a particular point and say, "this is the perfect variety, this is what we want," is that plant diseases and insects also have their own breeding program. They try out new plant varieties which were not available to them in the past, and are constantly trying to adapt themselves to hitherto resistant varieties. Even now, the new wheats are attacked by rust and smut, jowars by shoot-fly and midge, rice by blight, bajra by ergot, maize by mildew and insects. All these varieties may be susceptible to other diseases as yet unknown to us.



Purity analysis of seed survey samples at the Indian Agricultural Research Institute, New Delhi. (Photo: USDA)

Often a pest which has not been a major threat in a particular area, because the local crops are resistant to it, may attain virulent proportions by feeding on a more susceptible host over a number of seasons. A case in point is the large-scale planting of hybrid jowar in the rabi season undertaken by the government of Maharashtra in Vidarbha and Marathwada. This crop has been heavily attacked by shoot-fly, as the breeders of this variety of hybrid jowar had warned it would be, especially if planted in the rabi. Though the yields from these areas will be half of the normal expected yields for hybrid jowar, they will still be higher than the yields of the local variety, especially as this year there have been no late rains and the local

varieties of longer duration (150 days as against the 110 days required by the hybrid jowar) may not mature at all. However, the planting of the hybrid jowar has caused a higher incidence of shoot-fly in this region than ever before, and another season's planting of the same variety may well prove disastrous.

The hybrids and other high-yielding varieties were released after only 3-4 years of work and testing—justifiably enough, for reasons of expediency. More than anything else, we wanted to increase the production of foodgrains. Our mistake lies in resting on our oars. Shoot-fly, and many other diseases and insects cannot be controlled by pesticides to any material extent. The only way they can be is by developing new resistant varieties.

Unfortunately, the Central Government has not realized the need for continued research in this field. It has not yet sanctioned the budget for the coordinated sorghum research program and, as a result, the program is practically at a standstill. Instead the government is concentrating on a crash extension program which is destined to crash unless backed by research.

It is equally important for state governments to carry on plant breeding research. For example, crop varieties developed at the national level may not be ideally suited to Maharashtra. Varieties which are specifically adapted to conditions in the different areas of a state and which will give maximum yields there have to be developed through research in the states. It is of interest to note that the Maharashtra Department of Agriculture was not willing even to try the new hybrids when they were released. Now the state government has gone overboard over the new varieties and undertaken large plantations of them, but its enthusiasm has not carried it on to do further research on these varieties.

Administrative Impediments

Agricultural research in Maharashtra suffers from the same ills as beset research on other fields at the governmental level. Let us consider the case of millets. The main research station for millets is at Parbhani. The station owns very little land, and has to compete for irrigation water with the agricultural college there. There is no entomologist or pathologist on its staff. And such research staff as there is, is burdened with a lot of paper work and travel. The substations are often even worse off. At Vaijapur, a valuable collection of bajra varieties was neglected for lack of irrigation facilities. The Mohol substation did not have facilities even for accurate weighing of crop yields until a few years ago. The staff, perhaps for the above reasons, is mostly disinterested, though it is heartening to come across an occasional enthusiastic research worker.

Another factor responsible for lack of interest among research workers is the fact that transfers among them follow the lines of transfers in the revenue department, according to promotion and period of tenure. Transfers may take place from one research department to another. This can set a research program back by a few years until the newcomer familiarizes himself with the new crop, on which he may not have worked before, and reorients the research program according to his own views. For instance, the rice specialist in Maharashtra recently became a millet specialist, to the temporary detriment of both rice and millet research.

Indiscriminate Transfers

What is even worse are transfers between different types of jobs. An administrator in the Department of Agriculture may thus become a teacher in an agricultural college, only to be sent, a few years later, to do extension work. Some recent examples in Maharashtra will stress the point. A soil and water conservation expert has become a sugarcane specialist, a seed expert has become a professor of animal husbandry, and a professor of agronomy has become a district agricultural officer. The boundaries between these disciplines are not watertight, and a man who is doing one job well may do the others just as competently. However, research in any field presupposes years of study and work in that field. Transfers break the continuity of research, and the work and experience of each man transferred away from a particular field is wasted.

If we want to take agricultural research seriously we must stop quick and indiscriminate transfers of research staff. We must sanction substantial budgets for running research stations. And, finally, retirement of research workers must be not on their reaching a particular age but on failure to produce results in a given period of time. During this period, however, they must be given as free a hand as possible to conduct their work.

[Condensed from "A Word of Warning on Hybrids," by B. V. Nimbkar, Economic and Political Weekly. Bombay, Vol. II, No. 47, 2 December 1967, pp. 2085-2086.]

THE DANGERS OF FADDISM IN AGRICULTURE

S. C. Hsieh and V. W. Ruttan

[The experience of Taiwan, the Philippines, and Thailand shows that institutional changes, especially in water control and irrigation, are critical to realizing the yield potential of the new seed varieties. Efficient water control requires large public investments, however, and cannot be financed by the individual farmer.]

A new consensus appears to be emerging that intensive investment in research and development to produce improved inputs represents the missing link in the agricultural development process in many countries. There is increasing recognition that traditional practices, even as employed by the more successful farmers in each area, do not have a sufficiently high payoff to induce a rapid growth in aggregate output. And there is growing agreement that much agricultural research and development is highly location specific—it must be done in biological and economic environments approximating those where the innovation will be employed.

As an investigation of the agricultural history of the Philippines, Thailand, and Taiwan will show, there is danger that these insights may be contributing to a new set of oversimplifications regarding the requisites for rapid agricultural development. These countries have all experienced relatively rapid growth in total rice production since the early 1900s. The

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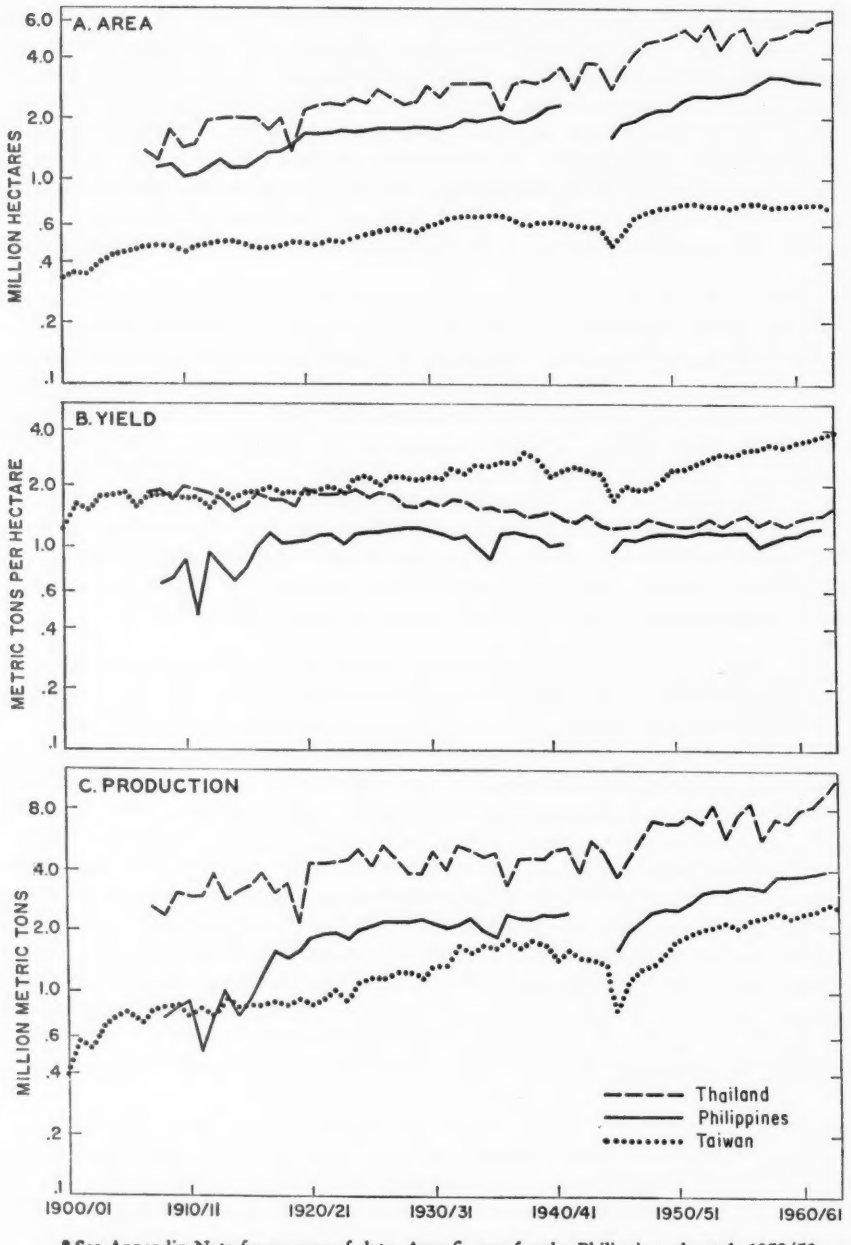
pattern of growth and the relative contribution of area and yield are, however, sharply different among the three countries. In the Philippines and Thailand, the growth in output is largely accounted for by increases in the area devoted to rice production, particularly prior to the early 1920s. National average rice yields per hectare since then seem to have remained almost unchanged in the Philippines and to have declined in Thailand. In Taiwan, on the other hand, the expansion of area planted was relatively slow. However, after 1920 Taiwan experienced a spectacular growth in yield per hectare, which rose from 1.84 metric tons in 1920/21-1921/22 to 3.58 in 1962/63-1963/64.

Both the long-term stability in national average yields in the Philippines and the long-term decline in Thailand are difficult to explain. The most reasonable explanation is that they reflect, on the one hand, expansion in areas devoted to low-yielding upland and rainfed rice and, on the other, either a stable or declining area devoted to production in the higher-yielding irrigated areas. In contrast, it seems likely that the higher yields on Taiwan have been due primarily to favorable technological and institutional factors, the most important of which were the innovations associated with the development, by the Japanese, of the ponlai varieties in the early 1920s, which provided an important breakthrough in rice yield potentials.

Disaggregation at the regional level reveals a different picture. Yields in central Thailand and the central Luzon area of the Philippines—the two regions where irrigation is most highly developed, and which account for a relatively high percentage of the rice which enters the commercial market—are almost identical and have risen at about the same rate over the last decade. Moreover, the rate of increase in both areas has been about the same as in Taiwan—with average yields remaining at slightly less than 50 percent of those in Taiwan since the early 1950s. Nevertheless, cultural innovations of the last several decades—of which there have been many—do not seem to have had any measurable impact on national average yields. Differences both between the two countries and among regions within each country are still primarily due to differences in environmental conditions under which rice is grown—differences in season (wet or dry) and water treatment (irrigated, rainfed, or upland).

It is possible, however, that both the Philippines and Thailand may be on the threshold of a "yield takeoff" similar to that in Taiwan in the mid-1920s. Some new technology has been introduced. New rice varieties are being developed which resemble, in their fertilizer-response and yield potential, the ponlai varieties that were introduced earlier in Taiwan. It is useful, therefore, to examine in greater detail the conditions under which the "yield takeoff" on Taiwan actually occurred.

CHART —AREA, YIELD, AND PRODUCTION OF RICE IN THE PHILIPPINES, THAILAND, AND TAIWAN, FROM THE EARLY 1900's TO 1963/64*



* See Appendix Note for sources of data. Area figures for the Philippines through 1952/53 are for area planted; all other area figures are harvested basis. All production and yield figures are in terms of rough rice.

The simplest answer is that the substantial irrigation development that had already been completed, or was completed within the next several years, provided the essential infrastructure investment for a rapid diffusion of the new technology. For only in the areas that were fully irrigated did the ponlai varieties have a clear comparative advantage relative to the older indica varieties. The diffusion of the new varieties would not have occurred as rapidly in the absence of a highly developed irrigation system.

With the introduction of the ponlai varieties in the mid-1920s, technology thus became a dominant variable in explaining differences in rice yields between Taiwan and the other two countries. Achievement of the yield potentials inherent in the new varieties was further stimulated by institutional developments such as: 1) the organization of farmers associations and irrigation associations during the period of Japanese occupation; 2) successful implementation of the land reform program; and 3) the reorganization of the farmers associations into effective, integrated farm supply, credit, and marketing cooperatives.

Despite the yield potential inherent in the new varieties now being introduced in the Philippines and Thailand, there seem clearly to be basic deficiencies in the sequence of development programming that may prevent them from repeating the experience of Taiwan. This is because the relationship between fertilizer use and the yield of rice depends on two critical factors. First, the rice variety must have the genetic capacity to respond to higher levels of fertilization in terms of higher grain yield; vegetative response, typical of most indica varieties, tends to induce lodging and is competitive with higher grain yield. Second, control of the timing and level of water application is essential. Lack of water control, resulting in either excess or inadequate water, can sharply reduce the response of yields to fertilization. Lack of both these factors accounts for the fact that farmers in Southeast Asia have, in the past, rarely fertilized rice grown under rainfed conditions even when fertilizer has been available.

In Taiwan, it will be remembered, a major share of the basic investment in irrigation was already completed before the beginning of the biological revolution that led to the yield takeoffs. This irrigation development, leading to effective water control, was a prerequisite to the effective diffusion of the new higher-yielding, labor-intensive, "fertilizer consuming" rice varieties. Institutional innovations such as extension work, farmers' associations, irrigation associations, and land reform followed and complemented both the investment in water control and the technological changes.

A reverse pattern is evident in the Philippines and Thailand. Postwar efforts to develop agriculture have concentrated very heavily

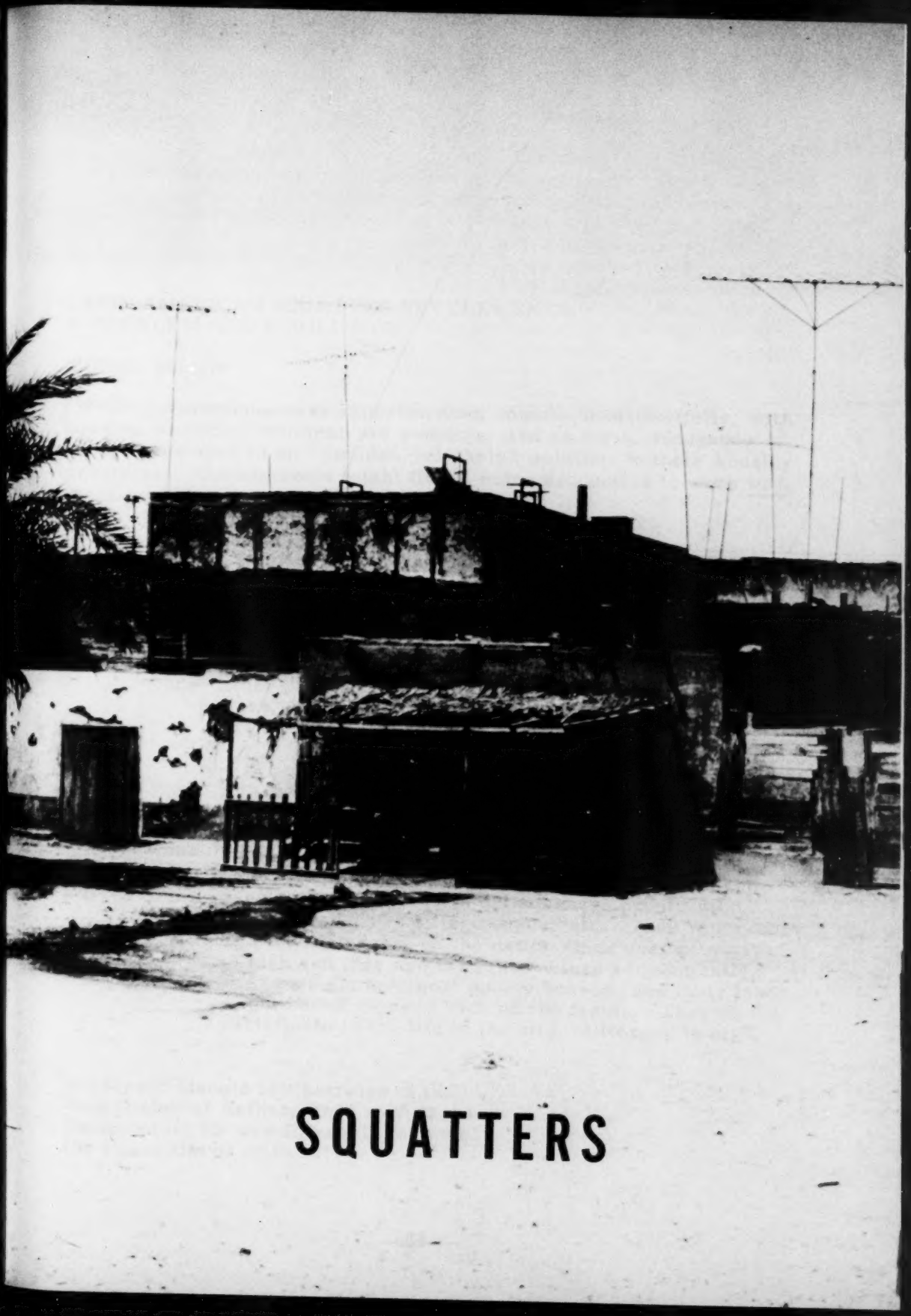
on institutional development. Neither country has yet placed major emphasis on the development of irrigation systems that would provide a dependable water supply in both wet and dry seasons to most of the rice-growing areas. It seems apparent that this lag in land and water resource development will impose serious limitations on achievement of the output potential associated with the technological advances—that is, introduction of high-yielding, fertilizer-responsive varieties—that are now being pushed.

A major implication of this analysis is that the factors which permit a province or region in a major rice-producing area like central Luzon or central Thailand to increase its yields substantially are largely beyond the control of the individual farmer. Modifications in the environment necessary to achieve efficient water control through irrigation and drainage will have to come primarily from public or semi-public agencies, because the necessary resources are, at present, invariably beyond the capacity of individual tenants or farm owners.

A second major implication is that the limitations on environmental control that prevent farmers from achieving the yield potentials of existing varieties will be an equally severe limitation on achievement of the much higher yield potentials embodied in the new varieties now being introduced. These new varieties are even more sensitive to effective environmental control, technical inputs, and management.

The magnitude of the investment required to realize the production potential inherent in the new technology tends to be substantially underestimated. Massive investment in the industries that produce the inputs of fertilizer and insecticides will be needed. Equally massive investment in irrigation will be required if the investment devoted to development of new varieties and production of the technical inputs is to achieve a reasonably high return. And it will be necessary to commit substantial increases in trained manpower to the tasks of management related both to the direct investment and to educational work associated with rapid achievement of the production potentials. Unfortunately, investment in research and development has not opened up a new, low-cost route to the rapid growth of agricultural output. It provides only one of the essential elements in a total program to increase agricultural production.

[Condensed from "Environmental, Technological, and Institutional Factors in the Growth of Rice Production: Philippines, Thailand, and Taiwan," Food Research Institute Studies. Stanford (Calif.), pp. 307-341.]



SQUATTERS

TV ANTENNAS DOT SKYLINE OF SQUATTER SETTLEMENT, PERU.
(PHOTO: MARY R. ROBERTSON)

LATIN AMERICAN SQUATTER SETTLEMENTS: A PROBLEM AND A SOLUTION

William Mangin

[While governments have experimented, mostly unsuccessfully, with housing projects, minimal aid projects, and so forth, thousands of people have applied an "unaided self-help" solution to their housing problems. Governments might find it more productive to work with these popular initiatives than to fight them.]

Since World War II, squatter settlements have mushroomed around large cities throughout the world—in Latin America, there are colonias proletarias in Mexico, barriadas brujas in Panama, ranchos in Venezuela, barriadas in Peru, callampas in Chile, cantegriles in Uruguay, favelas in Brazil, and, in other places, marginal areas, clandestine urbanizations, barrios of invasion, parachutists, phantom towns, etc.

The standard myths, not all incorrect and by no means mutually consistent, are, with some variation among countries, as follows: Squatter settlements are formed by rural people (Indians where possible) coming directly from "their" farms. They are chaotic and unorganized. They are slums, with accompanying crime, juvenile delinquency, prostitution, family breakdown, illegitimacy, etc. They represent an economic drain on the nation since unemployment is high and they are the lowest class economically, the hungriest and most poorly housed, and their labor might better be used back on the farms. They do not participate in the life of the city, illiteracy is high,

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and the education level low. They are rural peasant villages (or Indian communities) reconstituted in the cities. They are "breeding grounds for" radical political activity, particularly communism, because of resentment, ignorance, and a longing to be led.

Two "solutions" are usually advocated: 1) prevent migration by law or by making life in the provinces more attractive; or 2) prevent the formation of new squatter settlements by law and "eradicate" the existing ones, replacing them with housing projects. A familiar theme of anti-city feeling and rural, small-town bias runs through much of the European and North American commentary on squatter settlements. Latin American academics and politicians, on the other hand, tend to be anti-countryside and pro-city, considering the latter to be the repository of all that is good and beautiful in Spanish and Portuguese culture. In a strange way, both points of view reinforce each other in condemning squatter settlements.

In presenting a different, and I believe more hopeful and realistic, view, I do not mean to minimize the problems of overpopulation, rapid urbanization, poverty, prejudice, and lack of elementary health and social services. But the formation of squatter settlements is a popular response to rapid urbanization in countries that cannot or will not provide services for the increasing urban population. I see the squatter settlements as a process of social reconstruction through popular initiative.

How Barriadas Get Started

As a general pattern, the majority of residents of a settlement have been born in the provinces and have migrated from farms or small towns to the city. They have come to the barriada largely from the tenements, alleys, and other slums within city limits where they first settled. A census of a typical Lima barriada in 1959 showed the average time of residence in Lima for heads of families originally from the provinces to be nine years; practically none had been in Lima less than three. In Venezuela, where squatters comprise about 35 percent of the population of Caracas and 50 percent of that of Maracaibo, one study shows that close to 100 percent of the residents come from barrios within the city, not from the countryside.

The establishment of the community varies with local conditions, geographic and political. They arise on vacant land, usually uncultivated and owned by a government entity, on the outskirts of the city or on undesirable land within in—steep hillsides, swamps, river beds, dumps. Where there has been no active opposition from governments, settlements have been formed in an unorganized fashion by a few families drifting onto a site or, as in Guatemala, Guayaquil,

and parts of Lima, augmenting a group of families relocated by the government after a natural disaster. More common, however, is an organized invasion in the face of active police opposition. In countries not noted for governmental efficiency, some of the invasions have been remarkably well organized. In Lima, after months of planning, thousands of people moved during one night to a site that had been secretly surveyed and laid out. They arrived with the materials to build a straw house, all their belongings, and a Peruvian flag. In several cases, they returned to sites two and three times after police burned their belongings and beat and killed their fellows. The organizers were generally residents of the barriada of invasion. They often sought help from outsiders such as engineering students, lawyers, and, in at least two cases, army officers. Land speculators have been involved in several countries, but they generally appear after the invasion.

The original organization is strong at first. In Lima, it tends to lose its power as the barriada becomes integrated with the city, but in some places the organizations remain important as intermediaries with the government and as organizers of mutual-aid public works. In most of the barriadas studied, orderly, unofficial elections were held annually (as in the Lima barriada shown below), and the importance of the organization depended largely on the personality of the elected leader. The degree of organization in Rio's favela associations is striking. They have organized everything from private water systems, markets, labor division, and groups to raise money to buy the land on which they live, to Carnaval dance groups essential to the famous Rio festival. Associations frequently manage to get some assistance in installing sewers, water, roads, etc., and they provide a low-level, unofficial court for minor disputes. Most important, associations often give people a feeling of controlling their own destinies.

In Rio and Lima, many people warned me not to go into barriadas or favelas because they were full of criminals. In fact, however, squatter settlements are overwhelmingly composed of poor families who work

hard and aspire to get ahead legitimately. Petty thievery is common, low-level tax evasion a national pastime; disputes occur over land titles, children annoying or damaging others' property, small debts, dogs, etc. But assault outside the family is rare. Organized crime is practically non-existent. Some prostitutes lived in a barriada in which I worked in Lima, but they plied their trade elsewhere. Gambling is also on a low level because of the lack of money and traffic.

The importance of the family cannot be overestimated. The information on all the squatter settlements indicates that by far the greatest number of households consist of nuclear, bilateral families with resident fathers, though the populations are generally younger than the already young national population averages, and the birth rate higher. Family relationships are as ambivalent in the squatter settlements as outside. The same people who see the future becoming blacker every day have hope for the future. The same people who view their children as a burden believe that they should sacrifice for them. These contradictions are more apparent than real. This kind of ambivalence characterizes the human condition.

The Squatters' Economic Contributions

Just as traditional economists have difficulty with peasant economics, they have difficulty in evaluating the contribution (or lack of it) of squatter settlements to national and city economies. Obviously, one major contribution is that millions of people have solved their own housing problem in situations where the national governments were practically unable to move. On the other hand, as many governmental planners have pointed out, by so doing they have occupied land that might have a more "logical" use in a city, and they have made the provision of services such as water, sewage disposal, electricity, and paved streets much more expensive than if the land were empty. This dilemma, unfortunately, is only a dilemma for planners. People who need housing can't be kept in the pipeline for years, as a plan can. Clearly the land invaders want services and, in most cases, have shown themselves to be quite willing to pay for them. They are not, however, willing to wait for them on the basis of a governmental promise. The result has been the creation of many unsanitary communities with expensive private water and electric arrangements and poor internal transportation.

Squatter settlements make four kinds of contributions to national economies. First is the investment in housing and land improvement mentioned above. Constructions may take as long as ten years to complete. Land titles play a major role in investment in housing, and in places where a title or some assurance of permanence is thought to exist constructions are more elaborate than in those without

titles. Even with the land title problem, the vast majority of squatter residents are owner-occupiers. In no report does the percentage of renters go higher than 46 percent (in Mexico City) and it is usually closer to 4 or 5 percent (Venezuela, Peru, Brazil). The older the settlement, the higher the percentage of renters. The construction of houses, stairways, streets, water systems, water control dikes and spillways, etc., in the Rio favelas amounts to millions of dollars despite the threat of eviction.

The second contribution is in the job market. Unemployment figures are difficult to evaluate because of the large number of marginally employed and self-employed people. Residents of barriadas are engaged in a wide variety of occupations ranging in income from gardening and garbage collection, through skilled and unskilled factory work, service jobs in restaurants, police forces, armies, government offices, and banks, to store owners, teachers, lawyers, and doctors. Women work as domestic servants, waitresses, and factory workers. In the barriada Pampa de Comas in Lima, the membership of the residents' Club John F. Kennedy a Favor de Comas included a medical doctor, a bank branch manager, a police lieutenant, two university students, a lawyer, several store and bar owners, and two resident Peace Corps volunteers. Squatter settlements are seldom one-class communities.

In addition to the jobs held outside the settlements (the ones that appear in national employment figures) many people work full and part time within the settlement. Construction workers, particularly, find a great deal of part-time work.

A third contribution—the least known outside the settlements but extremely important monetarily—is the growth of small businesses, like the sidewalk cobbler shop pictured here. When a squatter settlement has become more or less established and accepted by the government, banks appear (mobile banks in panel trucks appear long before this point), movie houses are built, chain stores open, lottery shops open, etc. Even from the outset, however, the local people begin buying and selling to and from each other at a great rate. In a Lima barriada of some 1,500 houses, we counted more than 100 houses where something was sold. Some had very little merchandise, others did a booming business.

Bars, restaurants, garages, repair shops, barber shops, school supply stores, bakeries, groceries, fruit stores, and newsstands are reported in all of the squatter settlements. Bus companies are among the first groups to be formed if the established companies won't serve the community.

Markets grow up within squatter settlements and hundreds of peddlers go back and forth from central markets to the settlements by bicycle, tricycle, bus, and taxi carrying produce for resale. In Lima, the arrival of market inspectors and tax collectors is not exactly welcomed, but tax collection is often tolerated as a sign of recognition from outside and can be the final confidence-builder needed to encourage permanent construction. I have never seen a barriada or a rural store in Peru that did not keep a special set of books for the tax collector.

Real estate speculation takes place, as does considerable buying and selling of land with very elaborate, and generally totally illegal, titles changing hands. Moneylenders thrive in squatter settlements in Rio and Mexico City but are seldom found in Peruvian barriadas, where the residents go to kinsmen or compadres for money. Credit unions exist in many of the settlements.

The fourth contribution—intangible social capital invested in the creation of a community—is not exclusively economic. The community makes possible investment in housing and neighborhood improvements and investment in the numerous small enterprises. The community also involves the inhabitants of a squatter settlement in the life of the nation with a small but increasingly effective power base.

Participation in City and National Life

Not only do squatters do much of the service work of the city, but they also patronize the movies, bars, soccer games, musical tent shows, TV broadcasts, and other amusements. They buy from city merchants, borrow from and deposit money in city banks, and maintain a constant flow of traffic to and from government offices. They attend Catholic and Protestant services. They have relatives and friends in all parts of the city and spend much time visiting them. Children go to high schools and private schools in the city.

Education ranks near the top of the list of squatters' desiderata for children in every country I know of. In several places, particularly in Peru, the squatters have provided their own school buildings and, in some cases, hired their own teachers. One survey of Lima's most urbanized barriada found an even higher literacy rate than for Lima as a whole and considerably higher than that for the whole country. Newspapers and magazines sell well, transistor and plug-in radios are in practically every house, and TV aerials abound.

These Limeños are digging a sewer; the unfinished church in the background is another community project.

Finally, it should be stressed again that the particular conditions created by the squatter settlements forcibly involve them with the cities. They are compelled to acculturate strategically in order, as they so frequently point out, to defend themselves. They keep up with news, become sophisticated about how to manipulate the national and international bureaucracies, play off political parties, and become real estate and legal specialists. We were constantly surprised by the large numbers of "ordinary" barriada residents in Peru who were conversant with complex laws dealing with land titles, etc.

The feature most frequently cited as a carryover from rural culture is the presence of mutual-aid house construction and public works. Both are common. I have seen mestizo squatters, migrants from Peruvian coastal cities and plantations, working on roads and sewer trenches in barriadas on Sundays and saying that they were working in minga groups just like the Incas. Most of them had never heard of mingas before they read about them in newspapers. Nonetheless, the inspiration for cooperative work organization may well be a rural pattern re-created in the city. Cooperative labor is noted for every country surveyed. But while rural people retain many elements of rural culture in the city, the squatter settlements are urban phenomena. They result from sophisticated urban decisions made by long-time urban residents, and the internal political organization is new, following no rural pattern.

For most Latin American squatters the only communal political action they perform is the original invasion and defense of the settlement. Contrary to the myth of their radicalism, the dominant ideology of most of the active barriada people I studied seemed to be very similar to the beliefs of the small businessman in nineteenth-century England or the United States. These can be summed up in the familiar and accepted maxims: Work hard, save your money, trust only family members (and them not too much), outwit the state, vote conservatively if possible, but always in your own economic self-interest; educate your children for their future and as old-age insurance for yourself.

One rather puzzling factor must be noted in these populations that have achieved so much. Despite their own problem-solving efforts, they seem to believe that the only answer to their problems lies in outside solutions from the government, the United States, the United Nations, etc. This is also the assumption of practically every government report I have read on squatter settlements. Only 11 of more than 70 in our sample in a Lima barriada thought they could do anything to solve their own problems, and yet many of the other 59 were at the time active in the local association working on water, sewage disposal, and legal problems.

"Solutions" to the Problem

In sum, my major thesis has been that the squatter settlements represent a solution to the complex problem of rapid urbanization and migration combined with a housing shortage. While governments have experimented, mostly unsuccessfully, with housing projects, minimal aid projects, etc., thousands of people have applied an "unaided self-help" solution.

The well-intentioned view of what to do about the resulting squatter settlements might be termed the "festering sore (bleeding heart)" view. It is passionately concerned with eradicating these "subhuman" clusters. This view is the most popular one in print. When acted upon as in Peru, Brazil, Venezuela, and Argentina, it generally results in housing projects and satellite cities that prove to be too expensive for the dislocated squatters, as do urban renewal projects in the United States.

The other prevalent view, not as popular in print but just as frequently expressed by planners and decision makers, is to eradicate the settlements and send the squatters back to the farms from which they came. This might be called the "festering sore (hard nosed)" view. Thus far it has led mainly to talk. If set in the context of regional development and decentralization programs, it might have some effect on migration of new people to cities, but I doubt that it would affect existing settlements. In a small jungle colonization

program in Peru, where the government and a private foundation financed a move by a number of barriada residents to the upper Amazon region, the squatters simply "sold" their homes to others.

Attempts to displace the squatter settlements, when modest in scale, providing land, sewers, water, technical assistance, and possibly house shells, and allowing people to build at their own pace, has worked at least once in Valdivieso, Lima. That effort, however, used unoccupied land and did not involve eradication. The many proponents of eradication assume that almost nothing but worthless straw and scrap has been used for construction instead of the millions of dollars worth of labor and "noble" materials actually invested in most of the settlements.

AID and government officials, in the Salmon report (1966) and the Wagner, McVoy, Edwards report (1966), are beginning to recommend a third solution that seems to reflect a greater degree of ethnographic and political reality. The solution under consideration in Peru, Brazil, Colombia, Venezuela, and Chile is to check the growth of new squatter settlements by providing cheap land and services for those who want them, and to rehabilitate rather than eradicate most existing squatter settlements. This solution makes eminent sense for Peru and has been suggested by certain middle-level planners. The president and other leading architects, however, have thus far decided in favor of large construction programs involving high-rise apartments.

Eviction and eradication often create serious internal political disturbances. The tendency thus seems to be to establish the responsible agency and talk about eradication, but not to do very much. In my view this inaction is better than effective eviction, but not as good as investigating the settlement and rehabilitating it.

At least one source from every country surveyed stated that the squatters were more satisfied with their present housing and economic situation than with what they had had in the rural areas, small towns, and central city. In my study of a Peruvian barriada, only two families from the sample moved out in two years, one to return to the mountains, one to go to a house in the city. I heard of very few families returning to the country. The city growth and the squatter settlements are permanent developments. There are also small indications that a few governments are beginning to find it more productive to work with popular initiative than to fight it.

[Excerpted from Latin American Research Review. Austin (Texas): University of Texas, Vol. II, No. 3, 1967, pp. 65-98.]

A SUBURB OF KINSHASA

Henri Knoop

[The balanced sex ratio, high birth rate, and high employment rate in Kinsenso lend credence to the presumption that these Congolese squatters came from settled elements within the city rather than from the countryside. Policymakers may err in their prescriptions if they do not take account of this possibility.]

Like most African countries, the Congo, and particularly Kinshasa (Léopoldville), its capital city, has undergone a very rapid growth of urban population. Between 1945 and 1959, Kinshasa's population almost quadrupled. Although reliable data for the period after 1959 are completely lacking, it is evident to anyone familiar with the area that Kinshasa's demographic growth has been greatly accelerated since Independence. Studies by the Center for Economic Research of the Institute of Research in Economics and Sociology, at Lovanium University, indicate that the population was about 800,000 as of 1964—a gain of 200 percent in less than five years.

It is generally accepted that migration from rural areas—whether in response to the demands of a developing economy or to the attraction of city life or through expulsion from a supersaturated countryside—has been chiefly responsible for this soaring rate of urbanization. In Kinshasa, as elsewhere in Africa, urbanization has given rise to serious problems, one of the most obvious of which is the rapid growth of the so-called squatting villages at the outskirts of the city. It is with one such community, surveyed intensively by our Center for Economic Research in early 1965, that this paper is chiefly concerned.

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Kinsenso is situated in the hills at the southeastern outskirts of the capital. Its history does not go back very far. In the early 'fifties, a handful of Bakongo woodcutters settled on the then deserted site and built a small village, which even today differs in no respects from the traditional villages of the interior. About the same time, a few other men were attracted by the existence of an unfinished road and some cleared land in the neighborhood. Except for these two very small settlements, the place remained almost deserted until after Independence. Thereafter, squatters inflated the population to its present size of almost 13,000.

Unlike other squatting communities in the area, Kinsenso has benefited from the presence of a small but very dynamic Catholic mission. Apart from a church, it has a primary school and a small dispensary, both of which are relatively well equipped and well run; and most importantly, it has modest but efficient waterworks, supplying water of excellent quality at five public fountains distributed throughout the community. Despite these advantages, however, there seems to be no reason why Kinsenso should not be considered as demographically representative of the Kinshasa squatting belt.

Male-Female Balance

A preliminary analysis of the Center's data shows that Kinsenso has a remarkably good equilibrium between the sexes. This fact calls for an explanation, because it is completely different from what would be expected. If one accepts the usual postulate that African urban growth has resulted from migration to the cities for new types of employment, one would expect to find a marked excess of males over females. Indeed, a demographic sample survey in 1955-57 showed 172.41 adult males for every 100 adult females in Kinshasa. And yet the Kinsenso survey shows only 97.43 males for 100 females. How can this phenomenon be explained?

It is our contention that the explanation is to be found in some features particular to the community and, possibly, to the squatting belt of which it is a part. We would suggest that although the population of Kinsenso has been largely built up by migration, it is the origin of the migration movement that accounts for the balance between the sexes observed in Kinsenso. The community is largely made up not of migrants coming from the rural areas but of migrants coming from the center of the city—people who had migrated to Kinshasa prior to Independence and settled at that time in the overcrowded old quartiers of the city, either living with kinsmen or renting a house or a room. This wave of migration was probably highly selective, affecting particularly unmarried men in search of employment opportunities. However, it is likely that by the time of Independence most of the former migrants had already married. The

coming of Independence, with its concomitant breakdown of administration, offered them the possibility of leaving the city to settle on the virgin lands in its immediate neighborhood. It was possible to obtain there a parcel of land on which to build one's own house for a relatively modest price as compared to the rent paid in the center of Kinshasa. Moreover, although almost always provisory at first, this house was often superior in quality and better suited to the needs of the household than that previously occupied.

Furthermore, the great majority of Kinsenso's inhabitants are Bantandu and Bandibu—i. e., Bakongo from territories in the immediate neighborhood of Kinshasa. As the distance between their rural homes and Kinshasa was rather small, migration involved no major risks. It is likely, therefore, that married migrants moved to the cities together with their nuclear families, thus contributing to the creation of an equilibrium between sexes. This same phenomenon has been observed elsewhere in the Congo.

Another factor may have been a change in the motivation of rural-to-urban migration. In the confusion following Independence, the restrictions on rural exodus imposed by the authorities virtually disappeared. Consequently, people who would never have thought of leaving their villages were now tempted to try their chance in the capital. More importantly, people no longer emigrated almost exclusively for economic reasons. Some were just attracted by the easy way of life they thought they would find in the city. Some followed in the wake of kinsmen who had become part of the new ruling elite. This last phenomenon, in particular, is likely to have been of some importance. If this hypothesis proves to be correct, it might well explain to some extent the unexpectedly well-balanced character of the population of Kinsenso.

Employment

According to a widely held belief, unemployment in underdeveloped countries should be most pronounced in the suburban squatting communities. But preliminary analysis of the Kinsenso data shows a situation which completely deviates from this picture. As much as 59 percent of the adult male population is employed, while another 6 percent is working on its own account. Furthermore, of the boys in the age groups 15-19 and 20-24, respectively, as many as 82 and 32 percent are either students or apprentices. The unemployed account for 19 percent of the adult males, the majority of whom (14 percent of the adult males) has already held at least one job. This pattern does not bear out the hypothesis of young people leaving the country villages in search of urban employment and ending up jobless.

The explanation of this rather unexpected phenomenon probably is the same as that advanced earlier—that the community is largely made up of migrants coming from the center of Kinshasa who, at the time of the migration, were already more or less settled, economically as well as socially, in the city.

Although the findings of the Kinsenso survey clearly do not allow for any generalization as to the Kinshasa area as a whole, they nevertheless indicate that the squatting belt population should not necessarily be considered the least stabilized economically of the Kinshasa urban area. On the contrary, it is possible that the opposite would prove to be the case. At any rate, it appears to this writer that this conclusion should stimulate some serious thought among authorities concerned with the urbanization of this area.

Population Growth

The results of our survey of Kinsenso with regard to fertility rates also have policy implications for the authorities. The data reveal a very young and fertile population. Children under 10 years account for 43.8 percent of the total, and children under 15 for 54.67 percent. There are 120 children for every 100 adults and 256 children for every 100 women. Moreover, the children-women ratio is likely to rise in years to come, for the youth of the population suggests that many women are still at the beginning of their fertile period.

Kinsenso already has a birth rate far in excess of that for the country as a whole, particularly its rural parts. It is also markedly higher than that observed in Kinshasa itself. Moreover, it is unlikely that fertility will decline in the near future. A large household is still a source of prestige, and a numerous descent is still generally regarded as a security for old age. Schooling is not yet a significant obstacle to precocious marriages of young girls, although this may change eventually. In addition, the traditional prohibition of sexual relations between spouses during the period of suckling (12 to 15 months) may well tend to break down under the impact of urbanization and the decline of polygamy, thus causing a new rise in fertility.

There are other factors favoring high fertility. In town, better public health conditions and medical and pre-natal services reduce the cases of total or precocious sterility, miscarriages, and stillbirths, to say nothing of bringing down the death rate. The general health of urban populations is superior to that of rural populations and continues to improve.

The birth and death rates observed in Kinsenso show that the community is actually growing at such a rate of natural increase as to

double its population in less than 17 years, disregarding any migration. There is, indeed, some evidence that the growth of the community is no longer coming primarily from migration. As the following table shows, the number of arrivals reached a maximum in 1962 and has fallen rather quickly since then. As a percentage of total population, new arrivals in the first half of 1965 were only 2.84 percent—i.e., considerably below the rate of natural increase observed during the year ending June 30, 1965.

RATE OF MIGRATION, KINSENSO, 1961-1965

Year	1961	1962	1963	1964	First half 1965
Total Population	4,200	7,207	9,700	12,030	12,647
Arrivals	1,879	2,546	1,939	1,559	360
Rate of Migration	44.73%	35.32%	19.98%	12.95%	2.84%

Although the results of the Kinsenso survey are not necessarily representative for the whole Kinshasa area, they should nevertheless provoke some serious thought about their possible implications. One should at least face the possibility that the situation which now prevails in one community would prevail in the rest of the urban area. If the growth of the Kinshasa population should actually be coming primarily from natural increase, it is useless to try to solve the problems caused by demographic expansion only by controlling rural-to-urban migration, either directly, by coercive measures, or indirectly, by providing attractive alternative opportunities in the secondary urban centers of the country. Such efforts must fail if they are not accompanied by appropriate long-run social and economic measures that would make it possible to stabilize the actual population and absorb its natural increase.

[Condensed from "Some Demographic Characteristics of a Suburban Squatting Community of Léopoldville: A Preliminary Analysis," Cahiers Economiques et Sociaux. Kinshasa: Institute of Research in Economics and Sociology, Lovanium University, Vol. IV, No. 2, June 1966, pp. 119-146.]

POLICIES FOR SQUATTER RESETTLEMENT

Charles Abrams

[Resettlement—the traditional solution to problems posed by squatter settlements—requires firm, careful planning and execution if it is to succeed.]

Recommending uniform policies on squatting is risky because of the dissimilarity in the conditions of countries. Some nations are pitifully poor, others lack the administrative skills, the political stability, the financial mechanisms, or the materials with which to launch housing and land settlement programs and see them through. Moreover, the justification for government aid to squatters varies with the circumstances that impelled the squatting or which countenance it. Furthermore, there is no consensus on how much of a nation's limited resources should be devoted to its housing problem.

One thing is certain, however—where the implications of squatting have been ignored, it has tended to mushroom and assert its own claim to high priority. It is already a major social and political predicament which officials feel they must deal with realistically if their cities and their political controls are not to be overwhelmed. The solution, however, baffles them. They seek practical guidance on: how to discourage squatting, how to deal with the squatting that exists, how to control its spread, and how to direct the flow of squatting into more useful channels.

There are no categorical answers or sovereign remedies, but there are a few principles that might help in relevant situations.

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Some General Considerations

Though squatting is illegal, a strictly legalistic attitude toward the settlers will not generally resolve the problem. Often the squatters had no alternative. Sometimes, in fact, they may even have been encouraged to squat by government acquiescence. Many squatters can be induced to build or arrange for building their own shelters if given a reasonable opportunity to do so and if they are provided with land. Squatting on private property should be viewed as having more serious implications than squatting on public lands, however.

Squatting policy should be a part of the general economic planning of the country as well as of its local development programs. Prevention of squatting (or of its increase) should be a primary aim. Much squatting can be avoided by anticipating population movements and providing for them. The building of new towns or, even better, the expansion of existing towns with functioning services can help to divert settlements from the central cities, for example.

Where squatting is inevitable, a master city plan should be drawn up. Accessible land should be laid out in plots, supplied with utilities, and designated as areas on which families may settle legally. Transport routes, sites for schools, open spaces, services, and utilities should be defined for a staged development of the areas to be settled. This weakens the justification for illegal settlements and for other invasions of private or public property rights.

A study should be made of all squatting areas to determine which must be demolished and which can be improved with water, transport and roads, schools, services, and utilities. One successful clearance weakens the hold of squatters in other areas. If stern clearance action is indicated, therefore, it is often best to start with an area where the moral case for squatting is minimal, as where speculators or well-paid civil servants are prominently involved.

Alternative shelter or land as well as aid for purchase of materials should be provided in advance of the site clearance action. Otherwise, the squatters may simply shift from one illegal site to another. Provision should also be made for technical assistance to improve construction standards and sanitation. The land chosen should be near work locations or be simultaneously supplied with suitable transportation to reach work areas. Unavailability of employment will only force them again to seek their own footholds and make them more resistant than ever. Dealing with a representative committee selected by the squatters will often facilitate negotiations.

When squatting is extensive, dealing with it requires concerted effort at all levels of government. It may entail investment of

sizable public funds and allocations of land for settlements. Those trying to do the job will require freedom from political interference. A liaison between the industrial development agency and the resettlement and housing agencies is especially important, since squatting is most likely to occur in areas close to industry.

Legislation may be necessary to define the responsibilities of the resettlement agency, its relationships to the other official agencies and the requirement for cooperation. Such legislation should also grant the agency power to evict, resettle, lease or acquire property, and make satisfactory arrangements with squatters, owners, and others. Judicial powers may be conferred on the agency in areas where courts have not been able to function.

Suggested Steps

As part of a resettlement program, the following steps are suggested—again with variations for each special situation:

1. A squatter census should be taken to determine family structure and accommodations, type and location of employment, earnings, age, training, and experience. One aim should be to find out which squatters are casualties of the land and housing problems to whom the government has an obligation, and which are troublemakers and professionals trying to cash in on the nation's predicament.

2. Registration cards should be distributed to enable the resettlement agency to check on squatter migrations, influx of new squatters, and the progress of resettlement and rehabilitation efforts. Aerial reconnaissance and photographs may also help to identify new incursions. Every effort should be made to remove new squatters before they have completed their building.

3. A campaign explaining the aims of the program should be launched. Properly undertaken, it should help prevent the spread or resumption of squatting in forbidden areas and could win the cooperation of the squatters themselves against competitive invasions.

4. Reasonable allowances should be made available for resettlement to those qualifying. Where public housing is available, it should be offered to squatters as an inducement. Small long-term loans might also be made available for developing cottage industries, small workshops, and for essential equipment. Agricultural colonies should be established for those squatters who have been farmers and are prepared to go back to the land.

5. After tracts of land in or near the cities are found, long leases, hire-purchase agreements, or sales of plots should be negotiated

with squatters. Contracts should be concluded on practical and realistic terms with reasonable and realistic down payments. The plots should always be allotted before the squatters are moved.

6. Urban squatters should be moved in groups when their new plots are ready. In this way, compact areas can be cleared and restored to their rightful owners or to their intended uses. Individual or piecemeal removal too often leads to the clandestine filling of gaps overnight by new squatters. Synchronization of clearance programs with new land distribution and housing programs is indispensable.

7. Loans for materials, particularly roofs, aid for core houses, installment building, or land and utility projects should be available for those qualifying. A self-help program properly supervised may accompany the clearance or improvement program. The hiring of laborers or contractors by the squatters should not be discouraged.

8. In appropriate cases, betterment contributions should be collected from speculative private owners whose lands have been freed of squatters by the government. This may be particularly justifiable where the land was bought at low cost because of the squatter occupancy. The funds obtained might be earmarked to help defray the outlays of the agency in charge of resettlement.

9. A few pilot cooperatives should be encouraged among the squatters for furthering mutual-assistance projects. Squatters are often able and willing to join in a common resettlement program. Their desires should be respected and implemented.

Squatter policies call for firmness with understanding. Squatters will settle where they can if they are not told where they may. They will build what they can afford if they are not helped to build where and what they should. There should be less concern about what squatters will build than where they will build it, how the land is planned, and whether essential utilities and services are available. Initial layout is more important than initial standards of construction. Squatter houses will tend to improve with time and with better economic conditions, particularly if the squatters are given a stake in the society and the incentive of ownership.

[Excerpted from Squatter Settlements: The Problem and the Opportunity, Ideas and Methods Exchange No. 63, 302 Urban Planning. Washington (D. C.): Department of Housing and Urban Development, April 1966, pp. 5-13.]

SLUMS AND SQUATTERS IN SOUTHEAST ASIA

T. G. McGee

[No matter how ambitious resettlement schemes are, they must be regarded as temporary solutions only. Indeed, such measures may divert valuable finance into housing which might better have been spent on industrial development; in the end, the latter would be more rewarding for the city population.]

In the West the squatter process was associated with the growth of rural settlement; the slum with the formation of the industrial city. In Southeast Asia it is the squatter settlements which are the symptom of modern city growth. At the same time, the Southeast Asian city has not avoided the evil of the slum tenement; the overcrowded Chinatown is an ubiquitous feature. Thus, the process of city growth in Southeast Asia is saddled with the double evil of slum and squatter settlement, the combined population of which frequently makes up two-thirds of the total population of the cities.

While it is perfectly correct to label squatter settlements "slums," they are actually quite distinct from slum areas which have an overcrowded population and legal status of ownership. The danger is that if a common definition is accepted for both types of area, then a common solution can be offered. It is the writer's contention that the slum and the squatter settlements are distinct from each other and require different solutions for their problems.

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Squatter Settlements

Charles Abrams, in his pioneer study of the housing problems of the Third World city [Man's Struggle for Shelter in an Urbanizing World, Cambridge, 1964], distinguishes between two principal types of squatter. The first, the "street sleeper," the "mobile squatter," is relatively rare in Southeast Asia, as compared, say, to the cities of India; in Calcutta, for instance, it is estimated that some 600,000 people sleep on the streets. The second type of squatter—the man who illegally occupies land and builds his home on it—is far more common. While lack of comprehensive data prevents any overall estimate, scattered figures give an idea of the size of this significant element. Thus, in 1961 there were an estimated 750,000 squatters in Djakarta (25 percent), 100,000 in Kuala Lumpur (25 percent); in 1963 some 320,000 in Manila city (23 percent) and in Singapore from 200,000 to 250,000 (approximately 26 percent). There is also a sizable squatter population living outside the city, making the total population of squatters in Southeast Asian cities very large indeed.

Other factors beside rapid urbanization have contributed to the growth of these squatter settlements. Food shortages during the Japanese occupation forced many city dwellers to move out beyond city limits to practice subsistence farming, and some of them did not choose to move back into the city again afterward. Further, the disorder that followed the Japanese defeat, while the new civil administrations were struggling to establish themselves, allowed many squatters to occupy land, particularly bomb-damaged areas. This occurred, for instance, in the inner core area of Manila city within the walls of the old Spanish fort of Intramuros. Political instability in the countryside, together with enfeebled control in the large cities, allowed the city populations to occupy land illegally at their will. The lack of finance for urban development programs, associated with the potential political power of the squatters, prevented later city governments from removing them. Thus, these settlements have grown into a major element in the present-day city.

The appearance of the squatter settlements varies a great deal. Some, such as the Malay squatter settlements in Kuala Lumpur, retain a rural appearance with the houses exact replicas of those in the countryside. While there are few urban amenities, there is no real overcrowding; in fact, there is enough space for the squatters to possess quite sizable gardens. Other areas, such as the squatter settlements which existed in the Intramuros area, are much more crowded and the housing is of very poor quality; they are replicas of the "bidonvilles" of Algeria or the "favelas" of Rio de Janeiro. There are even some floating squatter colonies where populations live in junks and boats.

Despite these differences, squatter areas throughout Southeast Asia share certain features. They all lack the usual urban public amenities. Sanitation and water supplies are virtually non-existent, so many squatter settlements are located close to rivers and run the risk of frequent flooding in return for a ready-made water and sewerage system. (Occasionally, the municipal authorities, horrified at the health consequences of this practice, run standing pipelines into the squatter area.)

The lack of physical amenities and the poor standard of housing which characterize the squatter areas presents many safety and health hazards. While the inadequate diets and the lack of medical care forced on the squatters by their poverty contribute to the high occurrence of disease and death, the unsanitary, overcrowded living conditions are an aggravating factor. A less frequent but no less dangerous hazard is fire. The lack of piped water, the flammability

Roof squatters' shacks in Hong Kong. (Photo: UN)

of the attap roofs of the squatter settlements, and the prevalence of wood cooking fires combine to ensure that fires, once started, completely destroy these settlements. More than 70 percent of the fires in Manila city are said to occur in the squatter areas, and such figures can be duplicated in many other Southeast Asian cities. A final hazard is the widespread crime in these areas. In Djakarta, djembel-djembel (vagabonds) living in the squatter settlements or vagabond villages, are responsible for much of the crime in the city. Amongst the squatters such criminals find ready targets for petty extortion or recruits for their gangs. Fear of eviction; fear of fire; fear of crime—fear is the governing force of the squatter area.

In general, the squatters represent the most recent and the poorest of the city's population. The inhabitants are the mendicants of the city—the betcha drivers, the dock workers, the building laborers, and, of course, the unemployed. It is to these areas that the new migrants to the city move. The Indonesian novelist, Mochtar Lubis, describes how Saimun, a poor laborer, moved to a squatter area:

> He remembered how in the first weeks after his arrival in Djakarta he wept when the evening came and he knew not where to wander any more, and looked for a place to sleep under the awning of a shop. Until he met Itam who befriended him and they got work as garbage-removing coolies. And later they were able to rent lodgings in the hut of Pak Idjo, the driver of a delaman pony-cart. Just one room, next to the room where Pak Idjo slept with his old wife and their three children. But the hunger which gnawed at his guts never ceased, and the weariness in his bones never really went away.

It is true that in some squatter colonies people who have managed to upgrade their socio-economic status and income choose to remain in the areas, often becoming owners and landlords of rented housing. In general, wherever some degree of political and legal security is offered to the squatter, the standard of housing improves. For example, in the city of Davao in the Philippines the Mayor gave in to the demands of the squatters and legalized occupation of the land. The result has improved the social status of the owners and the quality of housing of the former squatter areas.

The Inner-City Tenements

In contrast, it is the densely packed inner-city cores of the Southeast Asian cities which, to the Westerner, are most easily recognizable as slums. These areas contain sizable proportions of the total population, with densities averaging over 100,000 people per square mile—very much higher, for instance, than Manhattan, the

core of New York City, with a density of 80,000 per square mile in 1956.

In Southeast Asia, these tenement slums are generally occupied by a population alien to the majority indigenous community of the country. In Rangoon, it is the Indian quarter in which the worst slums occur; in Bangkok, the Chinese quarter of Samphanthawong; in Singapore, the Chinese quarter from Anson Road to the Singapore River; in Manila, the Binondo Chinatown and its environs; and in Djakarta a similar pattern is repeated. Thus, the description of "slum" in the Southeast Asian city is typically the description of the Chinatown.

In these areas, work and residence are combined. The shop-house has a dual function of providing residence and a place for commerce. With such densities, it is not surprising that the streets are constantly crowded; overcrowding forces the population into the streets to shop, to play, to eat, and to communicate.

In the West, the slum has an emotive connotation. It is an area of crime, of poverty, of danger. The same cannot be said of a Chinatown. It is an area which has produced a distinct pattern of life and distinct patterns of associations, which socially, at least, does not deserve the label of "slum."

Potential Danger Spots

There seems no lack of agreement among the planners and civil servants responsible for city government in Southeast Asia that slums and squatter areas present problems. The question is, how does the planner set about solving them. For both areas the same somewhat ambitious answer is given—"resettlement."

For instance, after many years of procrastination, the Manila authorities demolished the Intramuros squatter settlement, shifting 11,000 people to Sapang Palay, a small municipality some sixteen miles from Manila City. The shift was extremely badly organized, and the squatters were virtually forced into the new area and left to build their own shacks again. In the area the squatters had left, it was intended to restore the ancient Spanish walls, to repave its streets, and to transform the whole of Intramuros into a cultural center. Although they have been more highly organized and provided better housing, similar patterns of squatter resettlement have occurred in Kuala Lumpur, particularly with reference to settlements located near the city's center.

It would appear that national prestige, more than concern for the social welfare of squatters has been the most active force leading

to their shift in these two cases. However, there are other examples in Southeast Asia where programs of squatter resettlement and low-cost building programs have been progressing at a very fast rate. The best example of this is in Singapore, where a Housing and Development Board has been responsible for an extremely active building program since 1960; it aims to build something like 15,000 dwelling units per year, of which 10,000 are to be built by the government for lower income groups, and the remaining 5,000 by private enterprise for middle and higher income groups. All the main housing estates have been planned. Considerable progress has been made, but there is still doubt if the building rate can keep pace with the population growth of Singapore City.

However, in most cities squatter settlements proliferate and slums persist. The population of these areas forms a potentially dangerous mass of political dynamite, for their economic and housing grievances offer a fertile ground for revolutionary propaganda, which could turn the mass of the city populations against their present governments. Attempts to evict them, even when alternative housing is provided, arouse tremendous resentment and have precipitated large-scale riots. In the end, it may well be that many Southeast Asian governments will be forced to accept the fact that the best solution is to give the squatters legal ownership of their land.

No matter how ambitious resettlement schemes are, they must be regarded as temporary solutions only. Many of the large city governments of Southeast Asia are today facing up to these problems to a varying degree. While the provision of adequate housing may alleviate some grievances, at most it is only a piecemeal measure which does not solve the more basic problems of unemployment and enlarging the economic base of the city. Indeed, such measures may divert valuable finance into housing which might have been better spent on industrial development, which in the end would be more rewarding for the city population. The slums and squatter areas of the Southeast Asian cities are simply symptoms of a wider condition of economic underdevelopment. The solution lies thus in overall planning rather than the piecemeal engineering of resettlement schemes.

[Excerpted from The Southeast Asian City: A Social Geography of the Primate Cities of Southeast Asia. London and New York: G. Bell and Sons, Ltd. and Frederick A. Praeger, Inc. 1967, Chapter 9, pp. 155-170. Reprinted with permission.]

TWO PAVEMENT DWELLERS OF INDIA

[Street sleepers, prevalent in India and elsewhere, are a special squatter sub-group. As the following profiles show, their problems are likely to be more serious than those of squatters with a roof over their heads, but they, too, are better integrated in the life of the city than one might think.]

KISHAN BABU. . . .

Mr. and Mrs. Kishan Babu and their two children live at a respectable address on Central Avenue in Calcutta, the site of a middle-class apartment house. But they would not normally be considered either respectable or middle-class, for they live outside—on the sidewalk.

There are about 100, 000 such people in this teeming catastrophe of a city, presumably rootless and defeated. The assumption is correct in many cases, but not, surprisingly, in most of them.

At the age of 22, Kishan Babu, for example, is neither rootless nor defeated. For orderliness and stability his life probably compares favorably with that of many of the apartment dwellers who live indoors at the same address.

He does not drift. Every night at about ten o'clock he and his family spread some matting on the same patch of sidewalk under the same portico. About forty persons are there—the same forty every night. They all say they are from Gujarat, a thousand miles away. But most of them, like Kishan Babu and his young wife, Lila, were born in Calcutta and grew up in its streets. They have never lived indoors.

The people under the next portico down the avenue are all from Bihar. And so it goes. On closer

The Babus at home. (Photo: Raghubir Singh/Nancy Palmer Agency)

examination the clusters of sidewalk dwellers almost seem to be reproductions of Indian villages. The most striking difference is that the men greatly outnumber the women, and many of them send money home to their families.

Kishan Babu's cluster is more settled. Everyone in it pursues the same trade—one of the oldest, more marginal occupations known to this city in which productive work is even harder to find than a home. It is a three-stage operation, requiring plenty of enterprise. First they buy stainless steel pots from a whosesaler on credit. Then they go from door to door in middle-class neighborhoods and exchange the pots for old clothes. Finally, they sell the old clothes, and pay the wholesaler. In this way, Kishan Babu and his wife clear 4 or 5 rupees a day (about 60 cents). They are always able to select their clothes from what they collect along the way and their earnings are enough, barely, for their food.

Their only other major expense is the rent they pay for a locker, or stall, in a shanty on the other side of the avenue. It is five feet

square, with a low metal roof that leaks and a damp dirt floor. It is here that they cook their evening meal over a wood fire. It was also here that Lila Babu gave birth to her two children, Dillip and Maya. To understand why the Babus choose to sleep on the sidewalk instead of indoors it is only necessary to visit the stall. The visitor regains the street with a deep sense of relief.

Most sidewalk dwellers, all but those who are completely down and out, have some tiny roofed space they can call their own, even if it is not inhabitable. It is this that gives them their legal existence: the address they need to qualify for a ration card, a vote, or a place in school for their children.

Kishan Babu is determined his children will go to school, as he himself did for a year. But he has little hope that he will be able to rescue his family from the sidewalk, something his own father never managed. "How can I?" he asks. "What is left after I pay the rent on that room you saw and buy the food for my family?"

This year the answer has been less than nothing. Food prices are higher in Calcutta now than ever before and Lila Babu's one gold earring—the family's most valued possession—is held by the pot wholesaler, to whom they owe 80 rupees, nearly $11. A good harvest, which could reduce food prices, would mean an opportunity to recover his wife's earring. Otherwise, Kishan Babu's life will go on as before.

BADAN SINGH. . . .

Just how many make their home on the streets is unknown. The official estimate is 7,000, but this is obviously too low. An after-dark tour of old Delhi, the unfashionable part of town, discloses hundreds in doorways, under arcades, by Moslem gates, and near the statue of Mahatma Gandhi. Few of them are beggars. They do casual work as porters, pedal bicycle rickshaws, or help out on building jobs.

Badan Singh, like many of the sidewalk sleepers, came here from Uttar Pradesh, to the east. A forlorn little man of 35, he left his wife and three children behind when the Ganges flooded over his small farm. He earns 30 to 40 cents a day unloading trucks at a depot near his resting place on the Asaf Ali Road. He lies down on a jute mat under a thin coverlet in the cement-streaked rags in which he works.

Sidewalk sleepers can't afford a room. They say the smallest crib costs nearly $4 a month and landlords demand two months' rent in advance. Badan Singh can't go to one of the city's public tents or

sheds. These shelters are closed until 5 a.m. and he must be up at 4 to work on the trucks.

His neighbors, like 19-year-old Naresh Kumar, start work at 6, but they won't go to the municipal shelters either. "Those places are not safe," Kumar says. "There is much disease, tuberculosis, syphilis. They are dirty. There are bad characters who rob your pockets. The chowkidars (night watchmen) demand a rupee if you stay more than a few nights." Kumar was not exaggerating. Most of the 21 free shelters run by the city for the homeless are large, leaky canvas tents. In one, hard by the Gandhi statue, 400 sleepers lie on the bare ground with little space between them. A few naked bulbs burn all night as protection of sorts against pickpockets. There are no latrines and men relieve themselves in the park outside.

The nights are cold and damp now in January. Sometimes temperatures fall to just above freezing. Some of Badan Singh's comrades wore cloths bound around their heads to keep out the cold. These nights, two or three will huddle under the same blanket for warmth. Nearly every day the cold kills a few of those who lie down on the streets to sleep.

[Excerpted: Kishan Babu by Joseph Lelyveld, The New York Times, 8 September 1967. Badan Singh by Bernard D. Nossiter, The Washington Post, 11 February 1968.]

PUBLIC ENTERPRISE

SKILLED LABORER IN MEXICO PLAYS AN IMPORTANT ROLE IN THE PUBLIC SECTOR.
(PHOTO: INTER-AMERICAN DEVELOPMENT BANK.)

THE CREATION OF PUBLIC ENTERPRISES

A. H. Hanson

[If more care were taken at the pre-planning and planning stages, developing countries would have far fewer burdensome public enterprises on their hands. Greater attention to achieving continuity among top-level management personnel is also required.]

Whereas developing countries frequently pay considerable attention to the legal status of their public enterprises and to the relationship between boards of managers and the political authorities, they do not always lavish equal care on decisions which, in the long run, are far more crucial—whether, when, where, and how to bring a public enterprise into existence.

These are questions that can be answered only in the most general terms by the development plan. At every moment there are alternative projects, both in the same area and in different areas of the economy, competing for scarce resources. When a choice has been made among them, further and equally important decisions with regard to location and scale appear on the agenda.

Means must be available for mobilizing the necessary economic information and assessing likely political repercussions. While the latter task is usually quite well done, the former either goes by default or is done hurriedly. It is well known that if more care were taken at this stage, developing countries would have far fewer burdensome projects on their hands.

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An African correspondent has aptly described the general mechanics of the "decision to create":

> The decision to create a public enterprise, be it a statutory body, a departmental enterprise or a joint enterprise under the Companies Law, is invariably taken by the government. Usually proposals are made by the ministry responsible for the sector in which the enterprise is to be established. These are submitted to the government for consideration and then submitted in the form of a bill to parliament for debate and promulgation into an Act. Where there is a Central Planning Agency, government ministries and departments as well as public corporations are invited to submit proposals which are incorporated in the draft plan for consideration by the government. In countries where Development Corporations or other similar bodies exist, initiative for new projects is taken by the body concerned but in almost all cases final approval is sought from the government which may, by executive instrument, approve the establishment of the project. This is necessary for reasons of coordination, location, and priority in utilization of limited national resources.

In practice, of course, the process of parturition may be far more prolonged than this necessarily generalized description suggests.

Procedures whereby the ultimate sanction is given for the creation of public enterprises necessarily vary. But whatever procedure is adopted should include at some stage—preferably an early one—the making and consideration of a feasibility study. Such a study, to be of maximum benefit, necessarily involves the comparison of the project under consideration with possible alternatives. The process of creation all too often falters at this point, either because no one is available with the knowledge and experience to undertake the investigations, or because the need for such investigations has not been recognized. Admittedly, it is not always possible to take a decision solely on grounds of economic rationality; but at least those who are proposing to create the public enterprise should be made to understand what is indicated by cost-benefit calculations. Indeed, precisely because political pressures are so intense—with the result that some enterprises are established and kept in operation by government subsidy—competent feasibility studies should not only be made, but also widely publicized.

It is an encouraging sign, however, that the need for cost-benefit studies has come to be more and more widely appreciated. One example is the Uganda Development Corporation, whose Development Division is responsible for investigating and making recommendations

on all new projects to be established by the Corporation itself or in association with private interests. The Corporation embarks on a new project only when its investigations have proved that the project would be technically, financially, and economically viable.

Nevertheless, even when such studies are undertaken, there is often a certain haphazardness of approach to them. Only where there are institutions which specifically undertake such studies and place the resultant documentation before the authorities charged with making the decision is the job likely to be properly done. Whether institutions of this kind should be located within development corporations, as is often the case, will depend partly upon the nature of a particular corporation's responsibilities and the conception it has (or has been given) of its duties. If the corporation is responsible for only a small section of the economy, many proposals for the creation of public enterprises will never be submitted to cost-benefit calculations. Moreover, if the corporation is working according to purely commercial criteria, its calculations are likely to be rather narrowly based.

Generally speaking, the number of people in a developing country with the qualifications necessary for this work is very small indeed. Hence it is important that their services be centralized and made available to all project-sponsoring authorities, whether ministries, development corporations, or other specialized government agencies having need of them. Relying on foreign consultants is undesirable, because the foreigner may not be sufficiently acquainted with the objects and methods of the country's development plan and is never sufficiently acquainted with its social conditions. The sooner the foreign consultant can be supplanted by the indigenous consultant, the greater is the likelihood that projects will be viable.

The inadequacy and technical incompetence of many of the studies made gives some cause for alarm; but even more alarming is the widespread tendency to confine such studies to questions of the location, size, layout, production techniques, etc., of projects on which a decision in principle has already been taken. The first and most important stage, evaluation of alternative projects, is sometimes done in an extremely inexpert way and frequently not done at all.

There is, in fact, no lack of guidance on how to make the studies that must precede the decision to create a public enterprise. But there is widespread failure to treat it seriously. Sometimes this is due to ignorance, but more often to a reluctance to spend the necessary time and money. Good feasibility surveys are time consuming and costly, but if the political and administrative authorities realize how much more costly failure to undertake them is likely to be, then they may at last receive the attention they deserve.

Planning and Construction

Most of these criticisms also apply to the "planning and construction" phase. This may be undertaken by the "responsible" ministry, or by the relevant development corporation, or by both together. In many cases the services of a foreign firm will be enlisted either to carry out specific duties under the supervision of a project authority, or to do a complete "turn-key" job, covering virtually everything from drawing-board work to commissioning and perhaps considerably more. In any case, many government agencies (and, in most of the countries with which we are here concerned, private agencies, too) are likely to be involved. Thus, there is always a sizable coordination problem, which may prove extremely serious for governments with a comparatively rudimentary apparatus of public administration.

The most essential point, of course, is that the ultimate responsibility for coordination should be clearly located and the authority concerned given the necessary powers. This is particularly important for the more complicated projects, such as multi-purpose river valley schemes, but the problem is present even in the smallest and most modest project. Its solution demands clearly established procedures. These are at their simplest and most straightforward when the work is confined to a development corporation. Once the government has given its consent to the corporation's proposals, the latter can make the necessary contracts and negotiate with the public authorities for permits, way-leaves, licenses, services, etc., in much the same manner as a private company.

In Pakistan, these general principles are applied to the planning and constructional activities of all public corporations, as distinct from government departments. Even so, financial supervision over the activities of the public corporation is exercised by the representative of the Finance Department who sits on the Board. In Uganda, only the Development Corporation possesses the degree of freedom in matters of planning and construction that is enjoyed by all public corporations in Pakistan. Other public corporations collaborate with government departments, although arrangements are usually made to allow the prospective public corporation to supervise the construction work, normally with the help of private firms of architects and consulting engineers.

In many other countries, however, there appears to be little in the way of recognized procedure. A major deficiency in Argentina, for example, is the lack of "intermediate planning organs." Whereas at one end of the "planning and construction" scale there is the National Development Council and at the other end the enterprise itself, there is practically nothing in between, since the economic ministries themselves have shown little interest in the subject. In

this respect Argentina compares unfavorably with a country such as Pakistan, which has at least begun to establish "planning cells" in a number of her central ministries.

Management

One of the most acute, and least acknowledged, problems of creating viable public enterprises in developing countries is the extreme instability of top-level managements. In some countries this is because appointments to public enterprises are considered part of a spoils system. The top-level personnel then changes whenever the government changes. Furthermore, top-level personnel tend to be dismissed when the performance of a public enterprise has been criticized and the responsible minister wants simultaneously to appear to respond to the criticism and to deny his own direct responsibility.

Another, more reputable reason, is the sheer difficulty of finding competent people to run public enterprises, particularly at the levels of remuneration and conditions of service frequently offered. Under such circumstances, the minister may be tempted to "try out" a succession of managers and directors in the hope that, more by good fortune than by good judgment, he will eventually find someone reasonably satisfactory. The result of such a search, of course, is to prevent any of the appointees from enjoying office for long enough to develop competence, so that the whole process becomes self-perpetuating. To these reasons one must add the pressures on incoming ministers to find appointments for their "friends" and—by way of complete contrast—the tendency in certain countries to use public enterprise managerships and directorships as posts into which civil servants who have become persona non grata, but who cannot be dismissed or down-graded, may be conveniently "shunted."

Much more could be said about managerial instability. For the present, it is enough to emphasize that it is the inescapable duty of the minister to try to ensure at least as much continuity of top-level personnel in public enterprise as in private enterprise.

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THE INDIAN PUBLIC SECTOR: A BALANCE SHEET

Administrative Reforms Commission,
Government of India

[An assessment of public sector performance in India highlights the positive contribution of public investments as well as the defects that have become visible. Among the latter are overcapitalization, overstaffing, lack of managerial and technical personnel, and high prices.]

The administration of public undertakings has now assumed a vital significance for Indian economic development. Before 1950, activity in the public sector was confined to railways, ports, communications, broadcasting, irrigation and power, and a few departmental industrial undertakings such as the ordnance factories, railway workshops, and post and telegraph workshops. Since then, the expansion of the public sector has been phenomenal. Today, it covers a vast range of activities—mining and metallurgy; manufacture of electrical goods, machine tools, chemicals, and fertilizers; building of ships, aircraft, and locomotives; building and construction; oil exploration, refining, and distribution; provision of air, sea, and road transport; industrial financing; and provision of life insurance. Of the 76 industrial and commercial undertakings in the central sector at the end of 1966-67, 70 were government companies—i.e., joint-stock companies in which government's participation was at least 50 percent. The remaining six—e.g., Air India, Life Insurance Corporation, Oil and Natural Gas Commission—have been set up as statutory corporations. In some fields, such as oil refineries and

The Administrative Reforms Commission, appointed in January 1966, is charged with examining Indian public administration at the federal and state levels. Its Chairman is K. Hanumanthaiya.

pharmaceuticals, a number of undertakings are functioning as independent legal entities. In others, one big enterprise includes several operating units; for example, Hindustan Steel Ltd. administers five of the six public steel-related projects.

Except for the nationalization of life insurance and air transport, and the acquisition of the interests of previous owners of a few units like Hindustan Shipyards, the expansion of the public corporate sector represents the entrepreneurial effort of the state. Investment, in the shape of equity and loans in the undertakings of the central government, has increased enormously. It was only about Rs. 29 crores [1 crore = 10,000,000; Rs. 7.5 = $1] in 1950, but the latest available figures show that it is now about Rs. 2,930 crores. Furthermore, investment in corresponding undertakings of state governments was about Rs. 2,000 crores at the end of 1965-66.

The Credit Side of the Ledger

It cannot be gainsaid that public undertakings in India have been powerful instruments for achieving social and economic objectives. Serious gaps in the economy, particularly in the field of heavy industries, have been overcome. For instance, production of steel ingots, which was 1.5 million tons in 1950-51, all in the private sector, increased to 6.2 million tons in 1965-66, with Hindustan Steel alone producing 3.4 million. Production of machine tools increased in value from Rs. 30 lakhs [1 lakh = 100,000] to Rs. 23 crores in the same period. As late as 1960-61, the production of crude oil was less than half a million tons; five years later it was 5 million tons.

Dependence on imports for goods in these sectors has shown a marked decline in recent years. In 1960-61, 91.6 percent of the total supply of machine tools had to be imported; this figure had come down to 44.6 percent by 1964-65. As regards petroleum products other than kerosene, the percentage of imports to total supply went down from 91.5 to 1.6 during the same period. The considerable savings in foreign exchange can easily be inferred. Perhaps of even greater importance is the progress achieved in the manufacture of a wide range of equipment needed for defense, including military tanks, jet aircraft, and electronic devices.

Planned dispersal of new public undertakings has also helped to reduce regional imbalances. Where economic and technical considerations have permitted, preference has generally been given to the relatively backward areas. Thus, steel plants have been located in Madhya Pradesh, Orissa, West Bengal, and Bihar; fertilizer factories in Bihar, Orissa, Assam, Uttar Pradesh, Kerala, Punjab, and Maharashtra; precision instruments factories in Rajasthan and Kerala; and a new machine tools plant in Rajasthan.

Employment has increased, too. The number of employees in the central enterprises other than railways, posts and telegraphs, and ordnance factories increased from about 154,000 in 1959-60 to 470,000 in 1965-66.

The growth of investment in the public sector also helps reduce the concentration of economic power in private hands. The share of the public sector as a whole in the reproducible tangible wealth of the country, which was about 15 percent in 1950-51, increased to 35 percent by the end of 1965-66. The progressive increase in the assets of public undertakings implies increasing control of the country's economy in the public interest.

The Debit Side

While public enterprises have strengthened and diversified the Indian economy and given impetus to economic growth, their working has also revealed defects which need to be removed to improve future performance.

As we have come to recognize the limits of raising taxes and floating loans for development purposes, it has become increasingly evident that state enterprises in India must generate surpluses for further development. Indeed, by the end of 1965-66, public undertakings of the central government had generated surpluses of about Rs. 287 crores, of which Rs. 69 crores were retained by the enterprises for self-financing and Rs. 218 crores set aside for depreciation. However, it is no doubt true that the return on capital employed in public undertakings has been on the low side. Leaving aside the substantial amounts invested in undertakings still under construction or in those whose purpose is promotional and developmental—on which it would not be fair to expect commercial returns—we still find that returns on capital are meager compared to those in private enterprise.

Of the 40 undertakings that have been brought under the category of "running concerns," 30 earned profits, one broke even, and 8 others incurred losses in 1965-66. As can be seen in the accompanying table, their performance showed a decline in terms of net profits over the previous year. Furthermore, several public sector projects have accumulated substantial losses. By the end of 1965-66, Hindustan Steel had cumulative losses of about Rs. 60 crores, Heavy Electricals (Bhopal) about Rs. 26 crores, the Neyveli Lignite Corporation about Rs. 4.5 crores, and the National Mineral Development Corporation about Rs. 2.5 crores. Losses of lesser magnitude have also accumulated in the case of several other undertakings.

Profit & Loss Picture of "Running Concerns"

	1965-66	1964-65
	(Rs. in crores)	
(A) Net profit earned (after providing for depreciation, interest, and tax)		
Hindustan Steel	1.7	2.1
Running concerns other than Hindustan Steel	15.8 [30]	19.1 [29]
TOTAL (A)	17.5	21.2
(B) Loss Incurred	7.9 [8]	2.4 [4]
TOTAL NET PROFIT (A)-(B)	9.6 [39]	18.8 [34]

Note: Figures in brackets indicate the number of undertakings. In the case of one undertaking, there was neither profit nor loss in 1965-66.

In extenuation, it should be noted that a portion of the amount invested even in the "running concerns" is tied up in projects under construction or in partial production, and that most of the capital invested relates to heavy industrial plants which usually have long gestation periods. Furthermore, most of the investment has been in areas where trained manpower and technical know-how were generally not available indigenously. Also, these projects were set up more or less to force the pace of economic development, and their managements often found themselves responsible for operating large and sophisticated complexes without adequate support from ancillary industries. The large capital outlay on these projects, with tied foreign aid, necessitates the provision of sizable amounts toward depreciation; this makes it difficult for managements to secure a high rate of return on capital.

In judging the performance of the public enterprises, it is also important to remember that the profit motive cannot be such an overriding factor in their case as it is in private enterprise. For example, in state trading, location of projects in backward regions, or operation of domestic air services on uneconomic routes, public interest rather than profit is the deciding factor. Public undertakings also face problems of securing managerial personnel of high quality. For several reasons, the terms and conditions of service in public undertakings have to bear a relation to those prevailing in the

government departments, and this puts them at a disadvantage when competing with private sector enterprises for scarce management skills.

However, even after making allowances for these factors, we find that other causes have contributed to the accumulation of losses to a substantial extent.

Overcapitalization is one of the main causes, particularly at Heavy Electricals at Bhopal, Hindustan Steel, and some of the fertilizer units, notably the one at Trombay. In many cases, inadequate attention at the planning stage led to the prolongation of the period of construction, delays in the attainment of production targets, and much higher investment than was originally envisaged. Assumptions made during initial planning were often not verified or supported by a thorough analysis of the relevant factors. The more significant deficiencies were lack of detailed analysis on the scope and pattern of product mix, inadequate soil investigation before the selection of site, lack of proper assessment of the demand for the product, and incomplete analysis of commercial profitability as well as national economic benefit. There have also been delays in sanctions during the construction period.

In many projects, expenditure has been excessive on townships, houses for higher executives, administrative buildings, and guest houses. For the central government undertakings alone, the total capital outlay on townships is reported to be about Rs. 300 crores—over one-tenth of the total investment on the projects. Many public undertakings have indeed been lavish in providing residential and office accommodations, and, in a few cases, in building unnecessarily extravagant schools and hospitals. Besides, high recurring subsidies have been required for upkeep and maintenance of townships in the absence of adequate municipal-type taxation of the staff and workers enjoying township facilities; this has led to increased production costs and has tended to distort the financial results of public enterprises.

In some cases, the implementation of expansion programs before a project reached full production, as in the case of Hindustan Steel, or underutilization of installed capacity, as in the Heavy Engineering Corporation (Ranchi), and Heavy Electricals (Bhopal), have also contributed to the accumulation of losses. There are also a few cases where losses could be attributed to shortcomings of the concerns themselves.

Overstaffing is one of the main reasons for the higher operating costs of many public enterprises. A comparison of original forecasts made in the detailed project reports of various steel plants,

fertilizer projects, etc. with actual staff strength shows that the latter is much in excess of that estimated originally and is higher than that in comparable private sector enterprises. While many of the early project reports were incomplete and were based on often inaccurate assumptions made by foreign consultants, there is no doubt that staff in the various public undertakings could be reduced.

Progress has also been tardy with regard to the setting up of the necessary design and consultancy organizations. Of equal significance is the failure to achieve healthy labor-management relations in several public undertakings. Little headway has been made in evolving and introducing effective incentive schemes.

The organizational structure devised for the management of public undertakings has also several deficiencies. The top management, consisting primarily of "policy-making" type of governing boards, have not been able to give sustained and positive direction to persons at the operating level. The boards have too much of official representation and too little of technical talent. Furthermore, the demarcation of responsibilities between the government and the public undertakings is not sufficiently clear cut, and this tends both to erode the autonomy of the public undertakings and to render ineffective the control exercised by government at certain key points.

There is a great need for coordination and provision of common services among public sector undertakings operating in the same field. Strong management institutions must be developed in different sectors of industry to take care of their promotional and developmental needs and for planning of future expansion. Thus, sector corporations covering related units could play an important role in scrutinizing the internal budgetary programs of the enterprises, developing information and reporting systems needed for management control, making a comparative appraisal of performance, and so forth.

We recognize, of course, that a sector corporation should not be allowed to crush, under the weight of its authority and size, the operational autonomy of its units. We have to preserve the managerial personality of the constituent units by giving each of them a financial framework within which to operate and against which performance can be evaluated. Within this framework, the aim should be to devolve full operational autonomy on the constituent units so that project managers are able to carry on day-to-day administration without interference from above.

Deputationists and foreign technicians. Perhaps the most important failure of the public sector has been its inability to develop the requisite managerial and technical personnel and its continued

dependence on both foreign engineers and technicians and deputationists from government. Deputationists occupy as many as 38 percent of the posts in the finance and accounts departments of these undertakings and 33 percent of the personnel and general administration side. They constitute only about 3 percent of the posts on the technical side, where foreign technicians are overly represented. At the same time, public undertakings have not been able to take full advantage of the promotion opportunities offered by public sector expansion. Side by side with cases of quick promotion have been cases where experienced persons have resigned for lack of promotion opportunities. Lack of career development schemes is the main reason for this state of affairs. We have failed to recognize that management of personnel is an inherent part of total management and that the responsibility for personnel management cannot be discharged by an authority remote from the operational area. Any pool scheme administered by an agency external to the public sector inevitably results in some abridgement of the autonomy of public undertakings.

High prices. Further, neither in quality nor price have some public undertakings brought full satisfaction. Many kinds of special steel must still be imported because the public sector steel plants are yet to achieve the needed quality of manufacture. The price of steel in India, as compared with that in other countries, is now higher by about 25 to 30 percent. The position is even worse in the case of fertilizer, where prices are 75 to 100 percent higher than those prevailing in other countries. Whatever may be the special and compelling reasons for these high prices, it is unfortunate that the Indian farmer, about the poorest in the world, is required to pay prices for his fertilizer which are about the highest in the world.

Nationalization or socialization does not mean bureaucratization. Not only should the public enterprises have the maximum possible autonomy to function on sound business and commercial lines, they should also be responsive to the needs and interests of the community. The main objective in the public sector ought to be public good. Damage to national economy as a result of miscalculation or mismanagement of these enterprises cannot be tolerated with equanimity by the people who ultimately have to bear the burden not only of providing the capital but also of having to pay high prices for their products.

[Condensed from Report on Public Sector Undertakings. New Delhi: Administrative Reforms Commission, Government of India, October 1967, 225 pp.]

THE FUNCTIONAL SETTING OF PUBLIC ENTERPRISE

A. H. Hanson

[Various factors and institutions impinge on public sector performance—the legislature, other administrative departments and ministries, consumers, other public and private enterprises. A number of steps can be taken in the interests of more harmonious relations among them.]

Relations with the Legislature

Relations between public enterprises and the legislature have caused considerable controversy in those developed countries which are also parliamentary democracies. This is because, in the interests of their commercial freedom, public enterprises are often granted immunities which exempt them, or appear to exempt them, from many of the controls which parliament is able to exercise over more "normal" government agencies. The question of how far public enterprises should be protected from parliamentary "interference" and "inquisitiveness" has been persistently asked and variously answered.

In the developing countries, such questions have actuality only to the extent that legislatures exist, are reasonably representative, and are able, to some degree, to hold the executive accountable for its actions. Significantly, discussion has been most active in India, where these conditions exist to the fullest measure. By contrast, in many other countries the legislature either takes very little interest in the affairs of public enterprises or is prevented from taking as much interest in them as it would like. Some of these countries, indeed, attribute at least part of the success of their

A second article by Mr. Hanson
appears on p. 71.

public enterprise to its freedom from legislative inquisition. One such is the Sudan, where the parliament has no committee which regularly discusses the enterprises, and where the legislative body as a whole has virtually no relationship with an enterprise subsequent to its creation by Act or Charter.

In countries where parliamentarians do show signs of activity, it is often activity of the wrong sort. The parliamentarians of Ecuador, for example, are not atypical in their overexclusive concern with promoting the interests and careers of constituents and protégés. A reporter from Pakistan says that the country's legislators are more interested in "detailed operations...than in broad policies and results." This is a familiar phenomenon.

Whether one wants to do anything about this situation—other than keep members of parliament as ignorant of, and as distant from, public enterprises as possible—depends on one's attitude toward the growth of parliamentary democracy. If that attitude is positive, then it is essential that parliamentarians be helped to develop a more "responsible" attitude toward public enterprise—i.e., that they should become intelligently concerned with its success and should cease to regard it simply as a source of patronage and influence.

In general, the occasions when parliament may most constructively discuss the affairs of a public enterprise are: 1) when the enterprise formulates its long-term development plans; 2) when it seeks permission to raise more capital funds; and 3) when it presents its annual report and accounts. On each of these occasions the opportunity will present itself to take a broad view of the performance, problems, and prospects of the enterprise.

If the opportunity is to be seized, an almost essential precondition is that parliament should be equipped with the necessary information. Often this may best be acquired as a result of inquiries pursued, in an organized way, by members of parliament themselves. Since information supplied by the enterprise, or by the minister, is necessarily partial and may even be irrelevant to the matters in which parliamentarians are most interested, there is much to be said for the use of a parliamentary committee as an information-collecting device. If such a committee proves successful, it can quickly move on to the making of proposals and suggestions.

Although annual reports and accounts of public enterprises are laid on the parliamentary tables of many countries, it is by no means usual to regard them as providing an opportunity for debate. Indeed, annual reports are often so cryptic, and annual accounts so confusing, that busy members may ignore them. In some countries, a more regular opportunity is provided by the "laying" of the annual

budget of the enterprise, either as an integral part of the national budget or as a document "annexed" to it. This has some advantages, but one can hardly advocate parliamentary control of a budget supposed to be based on commercial principles; and it is not likely to receive adequate discussion at "budget time," when the financial situation of the nation's government is under general review.

It is noteworthy that only a few countries have done much to ensure that either the responsible committee or the legislature as a whole has access to factual material of unimpeachable reliability. In some cases, the reports of the Auditor-General or Court of Accounts are useful to members energetic and interested enough to read them. In Israel, for instance, the reports of the State Comptroller are far wider in scope than comparable ones in other countries, and are now valuably supplemented by the reports of the Government Companies Authority. The State Enterprises Secretariat in Ghana should eventually play a similar role. In Yugoslavia, members of parliament receive monthly data about public enterprises from a body known as the "social bookkeeping service;" in Poland, a somewhat similar role is performed by the Sejm's "Supreme Chamber of Control," which is "called upon by the Constitution to supervise the economic, financial, organizational, and administrative activities of all State units, from the point of view of their legality, good management, purposefulness, and reliability." Elsewhere the process of supplying information about public enterprises to the legislature does not seem to be well organized.

If the role of the legislature vis-à-vis public enterprise is to be taken seriously, the present position cannot be regarded as satisfactory. Perhaps too many countries have tended to imitate the United Kingdom in its attempts (now largely abandoned) to keep the legislature at arm's length from the enterprises. One might suggest that the main effort be devoted not to restricting the role of the legislature, but to enabling it to behave more constructively. This would involve the provision of adequate opportunities for debating the affairs of public enterprise from the standpoint of principle, policy, and achievement; the establishment of a specialized legislative committee which could sift the information required for such debate and present it to members of the legislature in intelligible form; and the regular receipt, by such a committee, of well-authenticated material, statistical and otherwise, on which it could base its report.

It is true that, in removing the restrictions to which some legislatures are subject in their dealings with public enterprise, one is opening the door to interference with "day-to-day," as distinct from policy, matters. But if legislators are determined to immerse themselves in such matters, in the interests of the constituents they represent or the pressure groups with which they are connected, they

will certainly do so, whatever formal inhibitions may be imposed upon them. This being so, it is surely preferable for them to speak openly, in a public forum, rather than have recourse to private intrigue.

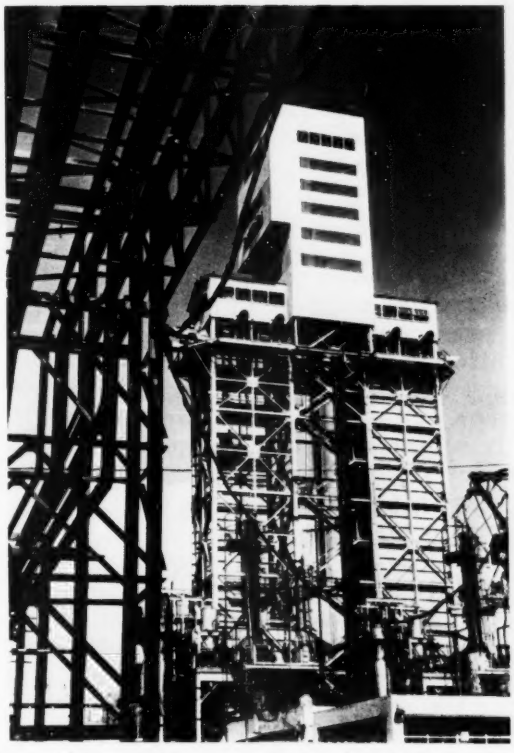
Relations with the Executive

To speak of a public enterprise's relations with the executive may seem anomalous, insofar as the enterprise might itself by considered part of the executive. In the case of "departmental" enterprises, this view is obviously correct, and it may even be correct de facto of corporations and companies. The use of patterns of organization other than the departmental is, however, supposed to confer some degree of "autonomy."

In some cases, the president or prime minister actually exercises powers of approval of certain key appointments. Pakistan offers an example of a president whose authority in this field is anything but nominal. Moreover, in certain Latin American countries, where ministers have the status of "secretaries to the presidency" and are given seats on the boards of the public enterprises, presidents not only have plenary powers but are liable to exercise them—sporadically—with some vigor. Indeed, in Mexico it appears that the President actually has direct contact with the managing directors of certain public enterprises, despite ministerial membership of the boards concerned. However, it is very doubtful whether authority of this kind should be directly exercised by an already overburdened chief executive. Normally, he will be somewhat remote from the public enterprise, delegating whatever powers over it the law may give him.

The most generally accepted pattern is that which gives responsibility for each enterprise to the minister within whose sphere of jurisdiction it naturally lies. Thus the Minister of Industry is responsible for all industrial enterprises, the Minister of Agriculture for all agricultural enterprises, the Minister of Finance for all state banks, etc. Obviously there are possibilities of jurisdictional conflict here. These can be solved by putting all public enterprises under one minister, but as a permanent arrangement this is hopeless, particularly as the public sector becomes fairly extensive. Significantly, most of the countries that once adopted it have now abandoned it.

Various general and specific responsibilities are usually conferred on the "responsible" minister. For example, he is often given the power to appoint and dismiss the top-level personnel (directors and general managers) and to determine their conditions of service. In some cases, the power is limited by laws laying down the qualifications of appointees, their periods of appointment, scales of salary, etc. But even when subject to limitation, the power of appointment



Fertilizer Corporation of India, urea plant at Trombay. (Photo: USAID)

and dismissal is an important weapon in the hands of the responsible minister. Unless countervailing forces are present, it can nullify the "freedom" which the enterprise has been granted to facilitate its performance of commercial functions.

Even when the minister's powers are subject to no effective sanctions, however, defining them tends to create a climate of opinion about minister-enterprise relationships, and indicates the areas where ministerial intervention may most usefully be exercised. These areas of "public interest" are, undoubtedly, general plans and programs, proposals for raising new capital, research, training, labor welfare, and pricing. It may be difficult, indeed impossible, to prevent ministerial interference from going far beyond such matters, but it is at least possible to underline them with all the authority that the law commands. Excessive ministerial interference can also be curbed by limiting the number of decisions for which ministerial approval must be obtained before action is taken. A power of "direction" merely enables a minister to intervene if he wishes to do so; one of "approval" compels him to intervene, and may result in the familiar but distressing spectacle of the recommendation which lies for weeks, unapproved and unsigned, on the minister's desk while he attends to other, more "important" matters. It may also be useful to compel the minister, by law, to pause and consult before issuing a directive. In the United Kingdom, the minister can issue general directives only after consultation with the boards of the enterprises concerned; the Sudan has imitated this provision, and also insists on consultation with the Council of Ministers.

The most important minister with an interest in the public enterprise other than the one immediately "responsible" is the minister

of finance. Although no country has gone so far as to give him overall responsibility, many have accorded him special powers. In Greece, he approves many of the decisions of public enterprise boards; in Mexico, he has authority over public enterprise budgets; in Pakistan, he uses his "Investment Cell" to analyze projects; in the Sudan, he is represented on all boards of public enterprises; in Argentina, he appoints a "syndic" to each board, with advisory duties and a suspensive veto. Whether the appointment of such finance ministry representatives is good or bad depends on the position of the board in the administrative and managerial hierarchy and on its functions. One may say, however, that the experience, in India and elsewhere, of "suspensive vetos" operated by ministry of finance representatives has not been fortunate, particularly from the standpoint of the development of responsible public enterprise managements.

In a few countries, certain powers are given to the minister of economic planning. He will clearly be interested in the performance of a public enterprise and will require information from it, but it is usually contrary to sound administrative practice to give him any direct authority.

Outside the Latin American countries, the more usual way of securing ministerial representation on a board is to empower the minister to appoint one of his senior civil servants to speak on his behalf. A distinction should here be made between the appointment of civil servants who are supposed to exercise their own judgment and those who are overt ministerial representatives. Most developing countries find it necessary to fill their boards with civil servants, because few suitable candidates for board membership present themselves from other walks of life; but many countries—Ghana, for example—strongly deny that these men have been appointed as representatives of their ministerial masters. The distinction may be a fine one, for in practice it is impossible for a civil servant who is seconded to a Board from a ministry to think of himself as other than a ministerial representative; that is why, in countries such as the United Kingdom, which place great emphasis on the independence of the board, civil servants appointed to Board membership are required to resign their civil service appointments. The distinction is nevertheless important; for those countries which think of the civil servant as representing the minister have a conception of the purpose and functions of the board which is different from that held by countries which think of the civil servant, qua board member, as a man exercising his own independent judgment.

As to the manner in which ministerial responsibilities are exercised, the spectrum of practices is so wide that generalization is almost impossible. At one extreme, the enterprises are little more than the political playthings of the irresponsible politicians who have

acquired ministerial office. This was the situation of many of the Turkish public enterprises during the later years of the Menderes régime. At the other extreme, as in many Latin American countries today, ministers seem unwilling or unable to exercise any effective supervision over the enterprises for which they are nominally responsible. The first extreme is always inimical to the cause of economic development; the second may be so, if competent and public-spirited people have not been appointed to run the enterprises. The ideal situation, as everyone knows, is one in which a public-spirited minister, committed to the cause of economic development, offers general guidance to the enterprises under his supervision, doing his best to find a point of balance between intervention and non-intervention based on the distinction (always difficult to clarify) between "general policy" and "day-to-day" administration.

In exercising his powers over public enterprises, the minister needs advice. A major source will inevitably be the senior civil servants in his ministry. Where senior civil servants are also appointed to the boards of public enterprises, this can give rise to considerable confusion in the line of command. Eventually the enterprise, whatever its legal status and constitutional immunities, is likely to be transformed into a mere offshoot of the ministry. If this is unavoidable, it ought to be clearly recognized; so long as the fiction of autonomy is maintained, little will be done, by way of precise delegation of powers, to establish the most satisfactory possible modus operandi.

Difficulties can also arise if the civil servants in the ministry acquire, de jure or de facto, the power to give orders to the enterprise on the minister's behalf. Civil servants without any conspicuous knowledge of business matters find themselves "processing" proposals sent up by the boards for ministerial approval, and giving "advice" to the enterprise managements which the latter feel compelled to consider authoritative. Once again, there is no very easy way out of this dilemma, but at least the rule can be laid down (as it has been in the United Arab Republic, where this problem has been acutely experienced) to the effect that civil servants, apart from those appointed to membership of the boards, are not in the line of command and therefore not authorized to give orders or even "advice" to the enterprises except on the direct orders of the minister himself.

In the last resort, as has been so frequently emphasized, minister-enterprise relationships depend not on the enforcement of legal rules, but on the development of satisfactory conventions. The minister needs to learn by experience what kinds of intervention are helpful and what kinds harmful, and to acquire the habit of trusting the judgment of the men whom he has appointed to top-level positions. Otherwise, public enterprise will be in danger of being stultified by bureaucratic, and ruined by political, interference.

Relations with Consumers

Special provisions to give the consumer a "voice" are often considered desirable when an enterprise wields monopoly powers or when it enjoys such a consistent seller's market that it is virtually exempted from competitive pressures. Organized protection of the consumers' interest is very difficult to arrange, however. Even highly developed countries have not made much progress in this field; developing countries are certainly not likely to do better in this respect, and the probability is that they will do much worse. Their ordinary consumers are mostly inarticulate, and the few who are capable of voicing their discontents are not likely to make use of the services of "representatives" on boards or consumer councils. Organized consumers, on the other hand, will hardly need officially provided means of bringing pressure to bear. Large firms, for instance, will make direct representations to the enterprise or ministry concerned; smaller ones will act through chambers of commerce, manufacturers' associations, and the like. Neither governments nor enterprises, moreover, are inclined to give high priority to the satisfaction of consumers' tastes. Countries with well-established local government institutions might try to use these as channels for orderly transmission of consumers' complaints to the authorities concerned; but very few developing countries have local government institutions capable of performing this function.

Relations with other Public Enterprises

The term "coordination" between public enterprises is often loosely employed. In general, one may say that the importance of coordinating agencies will tend to vary directly with the size and complexity of the public sector and inversely with the extent to which relations between public enterprises are governed by "market" considerations.

Relations with Enterprises in the Private Sector

In a mixed economy, mutual understanding between the public and the private entrepreneur becomes most important. Rarely, however, is it adequately achieved. Antagonism is intensified when public enterprises are given special privileges such as tax concessions, protection from competition, and priority in receiving scarce materials and foreign exchange. Concessions to specific undertakings or industries can certainly be justified, but there is no justification whatever for discriminating between the public sector and the private sector in this respect. It is the nature of the economic activity that should determine the appropriateness of privilege-granting. This is generally recognized in theory, but there is always the danger that a government, sensitive to criticisms of the unprofitability of its own enterprises, will endeavor to support them with more or less concealed subsidies.

Government-sponsored development and finance agencies provide one means of bringing public and private enterprise together in a fruitful relationship. To the extent that they give assistance to private entrepreneurs and invite the investment of private funds in their own undertakings, the distinction between public and private becomes blurred.

Another type of relationship arises from the appointment of private industrialists to the boards of public undertakings, usually on a part-time basis, with the aim of bringing to bear the knowledge and experience accumulated in relevant private business. A considerable number of such appointments have been made in India, and they are also reported from Argentina, Ecuador, Ghana, Greece, Nigeria, Pakistan, Spain, and Uganda. The typical difficulty, however, is persuading the truly experienced and responsible industrialist to devote the necessary portion of his time to such activities.

A further type of public-private relationship may be provided by common membership in associations, such as employers' associations and chambers of commerce. Such participation, one presumes, is good for mutual understanding. Even when association by-laws make public membership impossible, there is usually nothing to prevent the representatives of both "sides" from coming together in the various associations for the study and improvement of management which are now emerging all over the world. Indeed, experience suggests that this can be a type of relationship which is of great use to both.

[Excerpted from "Report of Preliminary Study," Organization and Administration of Public Enterprises: Selected Papers, op. cit., pp. 28-52.]

COMPETITION IN THE PUBLIC SECTOR

Judith Tendler

[Competition among state companies each engaged in constructing power generating facilities in the same area of Brazil has demonstrated a novel way of spurring performance in public enterprises. Each seems to have used standard efficiency criteria to justify its claim to financial and political backing—to the ultimate benefit of the Brazilian power sector.]

In Brazil, the technology of hydro-electric power facilitated the proliferation of various state generating companies. By the early 1960s, five publicly owned power companies were generating power or constructing hydro-projects in the south-central region of the country. Three of these—Centrais Elétricas de Urubupungá (CELUSA), Companhia Hidrelétrica do Rio Pardo (CHERP), and Usinas Elétricas do Paranapanema (USELPA)—were created and owned by the state of São Paulo; these were ultimately merged in 1966. A fourth, Centrais Elétricas de Minas Gerais, S.A. (CEMIG), was owned by the state of Minas Gerais. The last and most important was Central Elétrica de Furnas, a federally sponsored company created to provide bulk power to the Rio-São Paulo-Belo Horizonte area. Of course, the proliferation of more than one utility supplying a single market would have been immensely difficult at the power distribution end of the business, if not impossible. Distribution in the Rio-São Paulo metropolitan areas, moreover, was already the monopoly of the foreign-owned Rio and São Paulo Light companies. The point to be made here, however, is that the proliferation of state power generating companies seems to have demonstrated a novel way of spurring performance in

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state enterprise. Its lessons are not without relevance to other countries and other sectors where more than one public enterprise has emerged in the same field of industry.

A traditional argument against state production is that such ventures are not exposed to the rigors of market competition—either because they operate in an industry with natural monopoly (e.g., electric power), or because the State imposes its own monopoly (e.g., petroleum refining in Brazil). In the Brazilian electric power sector, the government went into a naturally monopolistic industry, but left alone the branch of the industry (distribution) that requires supply by only one company. By taking on generation only, state power production could contain many companies. As we shall see, in lieu of competition in the product market, competition for financing stimulated these state enterprises to behave like competitive private enterprises.

Competition for Finance

Power projects came to be considered by their promoters as mutually exclusive, in terms of financial support from federal or state governments—even when there was no evidence that one project would actually cancel the possibilities of another. Proponents of a power project would often oppose any other proposed plant on the assumption that government support of the two projects was an impossibility.

There was, indeed, some evidence for this belief. In the spring of 1959, the Special Commission to Study the Funil Rapids on the Rio Paraíba approached the Brazilian National Bank for Economic Development (BNDE) about the possibility of financing a hydro-plant at Funil. The BNDE at first indicated that if it lent to Funil, this would result in an overproportionate commitment of federal electrification appropriations to the south-central region, where Furnas was already under way. Furnas, the Bank explained, was absorbing roughly 80 percent of the resources of the Federal Electrification Fund. It would be politically difficult, the Bank told Funil's promoters, to assign resources to Funil in light of the Bank's conspicuous commitment to the Furnas project.

A decision to support one project, in other words, could mean the failure of another to locate financing. A few years later, the state of Guanabara had an experience similar to that of the Funil Commission. In 1963-64, a severe power shortage occurred and Governor Carlos Lacerda announced an emergency plan to buy two gas turbine plants with a capacity of 22 MW each. He applied to the U.S. Agency for International Development (AID) for a loan to finance the purchase of the plants from an American manufacturer. Ultimately, AID,

although sympathetic, followed the advice of its power advisers, who recommended that the crisis be met instead by the emergency construction of a transmission line from Furnas to Guanabara, instead of by the Governor's gas turbines. They suggested that a Furnas-Guanabara line would be more economic, in addition to being more justifiable as part of the long-range program for power supply to the south-central region. Lacerda's loan request, then, resulted in AID financing for Furnas, rather than for the state of Guanabara. The latter bought the gas turbines anyway, without the help of AID. Here was another case where the project of one state power entity failed to receive financing because another state company's project obtained it instead.

The result of this real or imagined exclusiveness of public financing of power projects was that state power companies often engaged in a somewhat novel form of competition. Each carried on a perpetual campaign for its project, a good part of which included debunking all other state companies' past and intended feats. Furnas scorns the extravagance and brashness of CELUSA; CELUSA charges that Furnas serves foreign interests by buying as much equipment as possible abroad ("Even the nails in the Furnas plant are imported," CELUSA people say); Caraguatatuba proponents criticize CELUSA, CHERP, and USELPA for being "dam-happy," and not worrying about more "responsible" multi-purpose approaches to power development; CELUSA criticizes Caraguatatuba supporters for childlike insistence on having their own coastal scarp development; CELUSA scornfully refers to USELPA's and CHERP's plants as playthings ("usinas pequeninas") in comparison to the much more serious size of their project; USELPA and CHERP, in turn, call CELUSA's Urubupungá complex a political white elephant, in view of the existence of closer, more economic sites.

One does not find, in short, a camaraderie between state power interests, based on the common cause of state capitalism or dislike of the foreign utility. It was even difficult to achieve cooperation between the state companies in circumstances where cooperation was necessary—as demonstrated by the intercompany controversies that flared during the Furnas-sponsored planning for integrated power supply in the south-central region.

In that the state companies depended on a common, limited supply of financing, there was actually more basis for conflict of interests between them than between them and the foreign utility in distribution. In many cases, of course, there were specific reasons for these rivalries. Two companies might be vying for a concession to the same site, or might tangle with each other when interconnection put them in the same grid. But in these cases, conflict arose because the companies brushed each other geographically. What we are interested

in here is a rivalry that exists even when companies are far apart. Although geographical separation of hydro-plants minimizes one kind of rivalry between state companies, another kind still exists—that which concerns the struggle for financing.

Competition and Performance

What was important about the rivalry between state companies was the standards that each used to proclaim its superiority. It is in this sense that their rivalry seemed to exhibit characteristics of market competition. The questions the companies would ask and answer about themselves and other companies were: Who can be a less corrupt company? Who can get more international financing? Who can get the most from the Ministry of Finance? Who can amortize his foreign loan the quickest? Who can build the biggest dam? Who can survive important political crises? Whose construction schedule has the least delays?

Each company dreaded a failure in one of these areas because of the possible loss of financial support that could result. The public press was an important link in this mechanism. Unconfirmed newspaper reports that the Furnas project was running behind schedule, for example, would assume the importance of exposés of scandal in city government. Public indignation would be expressed at the possibility of failure in such an important project, and the company would make painstaking denials. Indeed, the state company itself often manipulated this indignation to mobilize action on delayed financing. It would let newspapers or legislators know that a certain politician or financial institution's delay was threatening the completion of its project. Furnas used this tactic when the Development Bank took considerable time to process a loan application from the company. In August 1962, the President of Furnas told the press that the BNDE had promised financing for two tie-lines 25 kilometers in length, but still had not granted the funds. A power crisis would ensue, he warned, if the BNDE did not grant financing in time to allow completion of the lines before commissioning of the plant itself.

The newspaper announcement set off a wave of criticism of the BNDE and the delay became the subject of meetings of the various federations of industry and commerce, who issued warnings to the President of the country.

It was not unusual, then, to hear accusations such as the following, in the Congress. "The Governor of São Paulo has impeded the commencement of construction of the Jurumirim Hydro-electric Plant. The project has been ready for initiation since the beginning of his term. . . . It is well known. . . that pressures and suggestions have been made to 'take it slow.'"

Regardless of who was blamed for alleged irregularities in the execution of public power projects, the threat of such accusations was based on measures of performance by which state undertakings were judged. These measures of performance were also an important part of the rivalries that state companies waged with each other. For this reason, the term "competition" is used here to describe these conflicts—even though they occur in a non-competitive industry.

It might be said that such competition occurs in the factor rather than the product market, for the various companies are competing for limited supplies of an input—financing. It would be more apt, however, to say that state company competition is like competition in the product market, in that the product sold by the company is not power, but a power project. This description characterizes better the efficiency-inducing aspects of the competition. Each company, that is, strives for efficiency in its "product" so that the financier or the politician will be more apt to "buy" it rather than the rival company's project. A BNDE manager, in a report favoring the concession of financing to Furnas, cited the company's performance in one of these competitive areas. "In spite of all the snags that the company ran into, Furnas is one of the few firms that has met almost all its construction deadlines in the realization of the largest hydro-electric project on the Latin American continent."

Crucial to this efficiency-invoking aspect of state company competition is the fact that the project must seek financial support all the way through its period of construction. This is due to a combination of inflation and variations in the intensity of political support. Projects of long gestation, like hydro-plants, are always victim to inflationary cost increases during construction. As a result, considerable finance-hunting must be conducted during the course of the project's construction in order to meet unforeseen costs. Even foreseen costs are not always provided for by the time construction begins because of the difficulty of arranging public financing so far in advance and because of changes in official support for projects in midstream, changes that may cut off even earmarked revenues. The consequent perennial concern by a project's manager for its financing is described by the President of Furnas, in recounting his experience as Technical Director of CEMIG:

> Whoever has lived through—as we did—the execution of an investment program, is well acquainted with the nights of insomnia, when one lies awake worrying about the possibilities of an abrupt change in the politics of the state. A new secretary of finance may arrive on the scene who does not have the same understanding as his predecessor of the importance of one's program.

Inflation, on top of these variations in political support, simply increases a project's vulnerability to politics. It turns once-and-for-all legislative and executive approvals into temporary authorizations that require periodic and difficult reaffirmation. New appropriations must be authorized again and again throughout the project's construction in order to make up for the depreciation of the currency. These appropriations adjustments are not necessarily granted without using the occasion to make a new judgment of the project. The decision by a new finance secretary, governor, or president, therefore, to allow the continuation of a project in construction turns into a political proclamation of strong support. In an inflation-ridden country, then, lukewarmness on the part of a new government official toward a project in construction can be equivalent to opposition. In a country without inflation, a public works project in execution is more capable of withstanding lukewarmness on the part of a new secretary of finance. The degree of support required of him is not nearly so great.

There is one more reason why state company rivalry might be characterized as competition. By having many government companies in power, rather than one, the "friendship" between government and state company is, to a certain extent, sundered. The company, never certain of its sponsor's continued support, may thus seek to get out from under the government's protective wing. Instead of falling back on subsidy, it may feel even safer finishing up its project in a hurry so as to start earning its own revenues. Or it may be anxious to charge adequate rates so as to end its precarious dependence on government favor. "You hold your breath until your plant starts selling power," said one of the directors of CELUSA. "Then you won't have to depend on state budgets any longer."

The prejudicial effects of such financial and political uncertainties are well known and become highly visible in projects subject to long delay or complete failure. But there may be beneficial effects as well. By forcing the project's promoter to "sell his product" many times, financial uncertainties cause the invocation of performance standards throughout the whole period of construction—precisely the period when the discipline of these standards is most needed.

These standards of performance, it should be noted, are not as applicable to a company performing an ongoing activity, since it is more difficult to point to single achievements—such as meeting construction deadlines—as measures of performance. That the foreign company remained in distribution may, therefore, have had advantages, even though it involved a severe running-down of distribution facilities. To have a strong company in the common distribution market of the state companies was in effect to create a "buffer zone" between groups in rivalry. If São Paulo Light had been weak or

anxious to give up its concession, there may well have been a struggle between CELUSA and Furnas for that distribution market. They may have been impelled to seek this market in order to maintain the strength of their respective realms. That the Light was already firmly entrenched in distribution kept state enterprises busy out in the open spaces, where their competitiveness worked to build a power system. Thus, while conflict was not necessarily a good thing in itself, the existence of several state companies was good for getting generation facilities built in the power sector. The geographical distance separating hydro-installations, moreover, kept the inevitable antagonisms between these various entities from overwhelming the benefits of multi-company development.

PRICING POLICY FOR PUBLIC ENTERPRISE

Stephen A. Marglin

[Private sector rates of return and depreciation policies do not provide an adequate guide for public sector pricing. The latter must be based on "efficiency-oriented welfare economics" and the objectives of public policy.]

Pricing policy is an aspect of the design of projects as well as their operation. This is because of the intimate relationship between the operation of projects and the fulfillment of the goals that prompt the original sacrifice necessary to bring them into being.

The principal considerations in the formulation of pricing policies for public enterprise are: 1) the fulfillment of the multiple goals of public policy; 2) the distribution of gains from public enterprise between project users and the nation at large; 3) the reinvestment of benefits; and 4) the conflict between flexibility and certainty. The relative importance attached to each of these considerations must inevitably be a value judgment.

Objectives

The goals or objectives most relevant to decisions regarding the public sector would seem to be these four:

1. To increase aggregate or per capita consumption.

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2. To redistribute consumption, especially the increments provided by growth, to lower-income groups and regions in order to achieve greater equality.

The relevance of this objective to the formulation of public investment plans might be questioned. Why not design public sector projects to maximize the size of the economic pie and rely upon pricing and fiscal policies to achieve the desired slicing?

The most obvious reasons are the political factors that limit the flexibility of pricing and fiscal policies. For example, consider the alternatives that often face the designers of irrigation systems—namely, whether to provide water in a relatively small geographical area for a large fraction of the acreage of each farm or to spread the same amount of water more thinly over a larger number of holdings. The second alternative in general provides a smaller net contribution to aggregate consumption, for it increases the size of the water-distribution network and the distribution costs as well as the water losses due to evaporation and absorption in the canals. In addition, the cost of supporting services like extension, credit, and the distribution of inputs complementary to water are greater because more farmers and a larger geographical area are involved. Hence if pricing and fiscal policies were perfectly flexible, the intensive alternative would be the obvious choice; any advantages of the extensive alternative, on the ground that it provides a more desirable distribution of the income gains from irrigation, could be realized from the intensive alternative by increasing the water tax (or price) and giving cash subsidies to the farmers deprived of irrigation. All would presumably be better off. The problem is that the political difficulties of increasing water-tax rates reduce the government's flexibility to redistribute income in the manner suggested, and the difficulties of cash subsidies remove whatever remaining degree of freedom there might be. The only operational way to distribute the gains of irrigation widely, it would seem, is to construct extensive systems and suffer the losses in aggregate consumption this tactic entails.

Political factors may be the most important reason for eschewing reliance on pricing and fiscal policies in the pursuit of distributional goals, but there are economic grounds as well. Take pricing. Even viewed solely against the criterion of maximization of aggregate consumption, any departure from marginal-cost pricing opens the door to misallocations of resources. As for fiscal policy, all taxes and subsidies (other than lump-sum transfers, which are practicable only in a revolutionary context) distort incentives and thereby reduce aggregate consumption. Thus, implementing redistributional objectives by either means—through price and fiscal policies or through incorporating redistributional objectives into public investment criteria—

may lead to losses in aggregate consumption; it is a matter of judgment whether the conflict between maximizing the size of the economic pie and achieving an optimal slicing is decreased more by the one or the other means of achieving redistributional goals. In the absence of a specific preference for either tool at the level of a social objective, doubtless the course of wisdom is to rely on both direct and indirect tools.

3. To fulfill "merit wants." Both aggregate consumption and redistribution objectives presuppose "consumer sovereignty"—that is, that individuals' market valuations of alternative consumption bundles are the appropriate basis of comparison. For a variety of reasons however, policymakers may reject the preferences that individuals express in the market place in favor of politically determined consumption patterns. Richard Musgrave has labelled the goods and services thus favored "merit wants." For example, the government may decide to invest in education more heavily than market tests would suggest; or it may decide, in the interest of nutrition, to promote the production and consumption of gram and other pulses in preference to prestige cereals like wheat and rice that individuals would prefer at laissez-faire market prices.

4. To promote national self-sufficiency. For a developing country, "self-sufficiency" has at least two interpretations: equality between the value of exports and the value of imports, including capital imports on business-like terms—in other words, independence from foreign aid; and the goal of autarky in order to escape the vicissitudes of foreign trade. The first will be emphasized here.

This list of objectives may be incomplete, but many frequently listed "objectives" that have been omitted are in fact instruments for achieving those set forth above. Take, for instance, the objective of increasing employment. Insofar as this objective is not a means of increasing aggregate consumption, I believe that it is chiefly a means of redistributing consumption.

To stress the multiplicity of objectives is to stress the conflicts among them. The cause of systematic implementation of conflicting objectives is not helped by those more sophisticated economists who, recognizing the existence of a multiplicity of objectives, nevertheless throw up their hands at the idea of trying to attach relative weights to objectives other than aggregate consumption and therefore limit their attention to this last objective.

Maximization of aggregate consumption is by no means the only objective of public policy. And promotion of self-sufficiency and merit-want objectives, as well as of the redistribution objective, may dictate departures from the pricing policy that would contribute most to the aggregate consumption objective.

Even though redistribution may not be an explicit goal of a particular public investment, distributional considerations inevitably enter into pricing decisions, for price determines the division of the gains of the public investment between the project users and the community as a whole. The higher the revenues are, the lower the general taxation required to supply a given level of public services and public investment, and the lower the effective demand in the hands of project users. Hence the private consumption of the community as a whole, project users apart, can be higher without impairing the provision of public services or investment.

Other Considerations

On the other hand, the relationship between pricing policy and design decisions can be overemphasized. Although the financial feasibility of a proposed investment must inevitably be a chief, if not the only, consideration in the private sector of mixed-enterprise economies, one advantage of public enterprise is that narrow profit and loss considerations need not dominate investment decisions. Thus, the possibility of recovering costs (through revenues) should not necessarily be decisive in the allocation of public investment funds, nor should cost recovery determine pricing policy for public projects once they are in existence. Even when aggregate consumption benefits exceed aggregate consumption costs, it may be infeasible to recover costs. A large portion of aggregate consumption benefits may in certain instances take the form of external economies or "public" goods (like flood control) for which it is practically impossible to levy charges equal to the benefits received. Multiple tariffs and similar devices on vendible goods and services like electric energy and public transportation permit public authorities to transfer more of the gains afforded by public sector projects from the direct beneficiaries to the community as a whole than do uniform prices, but even here it may be impossible to recapture more than a small fraction of the consumers' surplus generated.

And even when it is possible to recapture benefits by means of high prices for the goods and services produced in the public sector, to do so may conflict with other objectives of public policy. Pricing policy is a direct determinant of benefits with respect to redistributional objectives, and pricing policy can indirectly affect the fulfillment of other objectives as well.

The prices charged for publicly produced goods and services have a direct bearing on the aggregate consumption that results from their provision. Pricing in accordance with "what the traffic will bear" may be considered a cruel and unusual punishment by users of project outputs, but it well may be the most effective way of ensuring that publicly produced goods and services end up in the uses for which

their value is highest. In any event, the converse seems to be indisputable: if prices fail altogether to reflect demands, it will be impossible to employ direct rationing and other devices to realize the full aggregate consumption potential of public sector projects.

Against this argument for relatively high prices to aid in rationing project outputs in accordance with their most productive uses must be placed an argument for low prices to ensure the quick response of potential users to the existence of public projects. It may be necessary to convince potential users that there are profits to be earned from employing public sector outputs in their economic activities, and concessional prices may be the most effective means of convincing skeptics. Such a situation might occur in the extension of irrigation to previously dry-farming areas. A word of caution is in order, however, with respect to promotional pricing: Although the case for price concessions in the early years of a project's life may be sound, arguments (other than redistribution) for perpetuating concessional pricing beyond, say, five to ten years seem less compelling. In the interest of equity, price increases as the project matures should not come as a surprise to project users.

Reinvestment is another factor in setting price policy. When the marginal internal rate of return and the marginal social rate of discount differ, the rate at which benefits are reinvested bears on the effectiveness of public investment. And the reinvestment rate can very likely be increased by high prices that transfer command over future resources from the private sector into public hands. The difference between social and private rates of discount means that, relative to private allocation of resources, the public sector will allocate a large proportion of the output of capital goods to increasing the capacity of capital-goods producing industries and a smaller proportion to increasing the capacity of consumer-goods industries. Indeed the logic of reinvestment—were this the only consideration—would lead to a pricing policy resembling that of a discriminatory monopolist who captures all the consumers' surplus he can.

The last of the considerations entering into pricing decisions has already been briefly alluded to in the discussion of promotional pricing: the conflict between the desire for flexibility in prices as a means of responding to changing conditions and the desire for certainty about future prices on the part of project users in order to justify the investment required to make effective use of project outputs. The conflict can in part be resolved by announcing the duration of price concessions in advance. But where changes in conditions cannot be foreseen, the conflict becomes more acute. To some extent it can be resolved by contracts or by guarantees of price ceilings on public outputs for a sufficient number of years to justify the private investment deemed desirable by public authorities.

However, the public interest should be protected by escape clauses permitting changes in the prices or distribution of public outputs, upon payment of indemnities, to reflect unexpected changes in demand that make alternative uses more attractive from the viewpoint of public policy than the uses originally contemplated.

The total effect of this discussion of pricing policies may appear to be negative, and indeed it has been largely designed to demonstrate the complexity of pricing decisions for a government that is pursuing a multiplicity of goals in its development policy. The futility of basing pricing policy on such simple rules as "price equal to marginal cost" emerges as a corollary. And if the dictates of efficiency-oriented welfare economics are insufficient guide rules, how much more wanting are private sector rates of return and depreciation policies. Indeed I should hope it superfluous to add at this point that private sector rates of return and depreciation policies are totally irrelevant to the formulation of public sector pricing policies. This is not to deny that reference to private sector practices may be useful in the propaganda war that may be required to implement public sector pricing policies determined in accordance with the considerations just discussed. But the propaganda tail should not wag the policy dog.

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A DIFFERENT ENTREPRENEURIAL ROLE FOR GOVERNMENT

Wilfred Malenbaum

[In the context of developing countries today, the government must play the role of entrepreneur—risk taker, marshaller of resources, and so forth. This does not require an increase in the business role of government, but, rather, leadership in stimulating change in the traditional sector of the economy.]

Self-sustaining economic growth remains a tantalizing and remote goal for the world's poor nations. It begins to seem that today's development programs may simply not be able to generate the expanding growth rates required. Changes in theory now suggest that overall progress can be achieved only after the traditional and modern sectors of the economy have somehow become integrated.

Most of today's programs give priority to finding the resources, knowledge, and skills for modern overhead sectors (power and transportation) and modern industrial sectors (especially heavy, capital-goods industries). Since 1950, many poor lands have in fact experienced a dramatic expansion in these modern sectors, an expansion achieved with greater ease than had been anticipated. But the expected spread effects have not materialized. The poor economies have maintained an unbalanced structure; the old dualism of modern and traditional sectors appears to have been aggravated.

Newer views on the nature of economic development in poor countries hold that the core development task must be to assure change in the traditional parts of the

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economy. New capital and other resources will continue to be needed, especially in the modern sectors, but the search for these has lower priority, and may even be subsidiary to, efforts to foster indigenous change in the traditional sectors. Where a large traditional sector seems to persist even as the modern sector grows, action for growth must seek out development paths that will succeed in bringing the modern and traditional components of the economy more closely together.

Government has a central role in these new actions. But the nature of government's involvement is different. In most countries, development programs have signaled an extension of the public investment role. Government has been deliberately expanding the scope of its business activities, because it believes such action best serves the nation's development objectives. It makes more and more investment directly. It constructs and operates large modern enterprises. In diverse ways, it substitutes for what private capital usually does, or what private interests might do were the conditions appropriate.

Newer views on the growth process stress that, through indirect influence, imaginative leadership, and direction, government should stimulate greater output in the traditional, and primarily private, parts of the economy. This approach aims at expanding the degree of utilization of resources in these sectors and tying these large and backward components more closely to the smaller and more modern parts.

Interrelation models point up the role of lead sectors, created imbalances, high linkages, and the like in the integration of the two components. They try to identify specific development paths in which the right action leads inevitably to a series of related actions, through more or less spontaneous reactions. The right action may involve greater use of primarily indigenous resources or the provision of new foreign resources or both. Or it may be a new law or new policy on the part of the government. However, the development paths are not obvious. They must be discovered in the dynamics of these non-growing economies and societies.

The literature of economic growth has long identified such novel, discontinuous changes with an entrepreneurial function. More than half a century ago, Schumpeter identified the entrepreneurial role as an essential economic element in any explanation of a real dynamic world—although backward societies seemed beyond his purview. Yet Schumpeter's entrepreneur has hardly found a central position in the doctrines and programs for economic change in today's poor areas. And if primary blame for non-growth is placed on a shortage of factors of production, especially capital (as in transformation models),

or on psychological and institutional factors (as in precondition models), the entrepreneur may indeed have a minor role. But this is not the case if development tasks in fact require interrelation models.

Two attributes of Schumpeter's concept are particularly relevant in this regard. First, the entrepreneur functions primarily through the better use of existing resources, bargained away from their present commitment. This function emphasizes the role of indigenous bank- or government-created credit; it does not depend on loans or grants from abroad. Second, the entrepreneur himself arises from the existing society. The entrepreneur is a deviant, one who pays a social price for bringing change to old and accepted ways. He confronts opposition "in groups threatened by the innovation, then in the difficulty in finding the necessary cooperation, finally in the difficulty in winning over consumers;... surmounting this opposition is always a special kind of task which does not exist in the customary course of life."

In Schumpeter's view of history, the necessary individuals emerged conveniently at the appropriate time. Unfortunately, this does not describe the real world, and especially not the world of today's poor countries. If the entrepreneurial role is to be filled, some individuals must be alerted to the task. Who? And how?

The Modern Entrepreneur

Even in poor countries, private entrepreneurs find ample scope and ample returns for their efforts without having to devote energy and resources to change in the traditional sectors. Moreover, contrary to common belief, the supply of entrepreneurial talent has not in fact been so meager as to deter the expansion of industries and various services. Where opportunities exist, indigenous businessmen appear—able, apparently, to cope with the appropriate scale of effort. Modern sectors grow apace in poor country after poor country. Yet industrial expansion is not meeting today's development needs. Indeed, industrial progress is itself contributing to greater dualism in the economic structure. In today's poor countries, only the government can fill the entrepreneurship role outlined here; alternatives in the private sector do not exist to any significant extent.

The entrepreneurial role required is, however, different from the business-type role government has been playing. As is well known, the latter has been expanding. In recent years, indeed, governments in poor nations have been criticized for overextending their commitments in this area. The tasks assumed have exceeded the capacities of the governmental bureaucracy; activities have been extended in directions that could have been pursued at least as successfully through non-governmental channels.

The specific tasks that will be required of government are difficult to define, since there is little operational experience. At minimum, there will be need for many kinds of actions that are now familiar—the provision of education and various types of technical training, the efficient conduct of familiar services of supply. But the much more important addition is imaginative and committed leadership. Government needs to convince the people in the traditional sector that they and their economic activity are of fundamental importance to the national effort, that leadership at all layers throughout the land is identified with their efforts. In the constant search for new ways to expand output per man, for new opportunities to tie traditional and modern together, government needs flexibility to embark on alternative courses of action, and objectivity to appraise actual performance as a guide to new types of action. While private activity plays an important role, there can be no private alternatives to government leadership, especially in the early years.

Whether governments will fare better in the types of action suggested here cannot be foretold. But a prerequisite for government's doing well in this entrepreneurial function is the conviction on the part of government that change in the traditional sectors is the route to self-sustaining economic growth. Modernization can only take root where the traditional sectors are stirring. Only with such change can sustained progress in the modern sectors and in the overall economy be anticipated.

[Excerpted from "Government, Entrepreneurship, and Economic Growth in Poor Lands," World Politics. Princeton (N. J.): Princeton University Press, Vol. XIX, No. 1, October 1966, pp. 52-68.]

FIVE VIEWS ON GUNNAR MYRDAL

Asian Drama, An Inquiry Into the Poverty of Nations by Gunnar Myrdal. New York: Twentieth Century Fund, 1968, three volumes, 2,221 pages, hardcover $25; paperback, Pantheon Press, $8.50.

The latest work by Gunnar Myrdal, the noted Swedish economist, promises to become a landmark in economic development literature. Although Professor Myrdal ultimately rejected the idea of attempting to outline a prescriptive development strategy, his book's great length and mass of detail offer a wealth of insights into particular facets of the economic development picture as well as a general way of looking at development problems. As the following extracts from several reviews show, it is possible for professionals of different outlooks to draw quite different lessons from Asian Drama. Kenneth Boulding, president of the American Economic Association, emphasizes the need for a realistic reappraisal of the total social dynamic of poor societies by their elites. L. F. Goodstadt, writing from Hong Kong with a businessman's point of view, believes Asian Drama sets out an unanswerable case against planning. Sham Lal, typical of many Indian intellectuals, blames the Indian political system for permitting the indiscipline that Professor Myrdal finds impeding development. Raymond Saulnier, former chief economic adviser to U.S. President Eisenhower, 1956-61, points to Asian Drama's emphasis on agriculture and suggests a larger role for private enterprise. Thomas Balogh, a prominent English planner and adviser to the British Labour Government, draws the inference that the "frustration of genuine revolution" is at the root of continued underdevelopment in South and Southeast Asia. Despite differences in emphasis and outlook, however, all the reviewers can join Mr. Balogh in seeing Asian Drama as "an indispensable quarry for all further reading on development."—Ed.

KENNETH E. BOULDING, Professor of Economics, University of Colorado.

Even with all the unfortunate overtones of the word it seems impossible to avoid calling this study monumental. It is large, authoritative, and carries the imprint of a man who may very well be the world's top social scientist. It is timely, and it deals with what is perhaps the most important subject facing the human race today. With its great length and a certain sense of urgency pervading it, there is inevitably some repetition, but the faint-hearted reader should be advised that the book improves as it goes along. There is much to be said for starting with the Appendices in Volume 3, many of which are important monographs in their own right. The work is excellently indexed and the documentation and footnoting is extensive, almost beyond the call of duty.

The book's main question is indicated by its subtitle. Why are these countries so poor, as indeed they are, and what keeps them poor? Why is the process of development and modernization so slow and so difficult, in spite of wide general agreement about the objectives of policy and the desirability of progress on the part of the ruling groups? Even though the book deals with Asia, much of the analysis and conclusions apply to the rest of the underdeveloped world.

The cumulative effect of Asian Drama is depressing in the extreme. Volume 1 begins on a note of modest optimism, and one suspects that much of this was written before the study really got well under way. The ideals of modernization are clearly explained, and it is evident that these ideals and values are very widely accepted by the ruling groups. It is possible for the reader to have the elfish thought that what Myrdal really means by modernization is turning people into Swedes—rational, productive, clean, healthy, honest, farsighted, and so on. Furthermore, in the first volume there is some optimism about "the third world of planning." The rulers of these countries are all committed to extensive government action to implement the values they hold. No longer is development to be left to the vast, incoherent, ecological forces of the market. The hand of the planner will guide the society along the narrow expansion path that leads to riches.

As the work goes on, however, one catches an increasing sense of depression as the carefully documented and marshalled facts come in. It becomes clear that these countries are never going to be much like Sweden and their people are never going to be Swedes. The transmission belts of the traditional culture are too strong. The vested interests are too great and there is an appalling homeostasis about the traditional village which seems to insure that what comes in from outside is eventually diverted into the old power structure and used to suppress change rather than encourage it.

Furthermore, the impact of the outside world in these countries has intensified their own problems. We see this in the most extreme form in Vietnam, but we see it also in the population explosion, which has to be regarded as something completely exogenous to the existing social system of this region, and in the debilitating ambivalence, even of the elite, toward modern institutions because they are not only modern, but European or Western, and hence tinged with the hate-love relationship of the oppressed for the oppressor.

Myrdal is determined not to be mealy-mouthed. He has an excellent Appendix on Diplomacy by Terminology in which he decries the confusion of thought which so easily follows upon the use of polite substitutes for four-letter words like "poor." He is outspoken and well informed on problems of corruption, a little less so perhaps on the more elusive problem of incompetence. He is unsparing, furthermore, in his criticism of those Western economists and social scientists who think that development is equivalent to technology and who are unwilling to recognize the obstacles created by ancient tradition, class structures, and, especially, by the power structure of the society. It is refreshing to have someone who is not a Marxist point out that existing power and property structures, especially in the village, may be the most important obstacle to development. On the other hand, something in Myrdal is a little reminiscent of the depressing discovery of the New Left that the powerful have power and that, therefore, very little can be done about it. Toward the end of the book Myrdal seems constantly to be saying that such and such should be done, but it will not be done because of the power structure.

In spite of the book's tremendous size and extensive coverage, there are some rather striking omissions. There is no really adequate discussion, for instance, of the role of the defense establishments and the war industry, either in the economic or the political life of these countries. Even more surprising, there is no comprehensive description of the system of taxation and public finance which one would have thought crucial to the development problem. There are only rather incidental references to the banking system and the nature of capital markets and financial institutions. These omissions may have been justified by the already enormous extent of the work and a certain pressure of urgency. Nevertheless, they do detract from the completeness of the argument.

The term "soft states" is used frequently to describe the South Asian countries. What Myrdal seems to mean by this is that they are "undisciplined," in the sense that the actions of government are not necessarily carried out, that the government is unwilling to use coercion against its own people, and that perhaps there is a tendency to substitute words, assertions, and even legislative acts for things and deeds. The term "soft," however, in spite of having four letters,

may also be part of the diplomatic vocabulary. In many respects, these states are highly coercive, especially in regard to racial, religious, or linguistic minorities. Furthermore, most of them have no hesitation in using military violence, either internally or externally, and waste their desperately sparse resources in arms races. In their foreign policies toward each other, they are strongly reminiscent of nineteenth-century Europe. This hardly seems to be "soft." In any event, though their ideals of modernization and democracy are not matched by their performance, this may not mean so much an unwillingness to coerce as a covert recognition of the power structure. In Myrdal's terms, indeed, the United States could very well be accused of being a "soft" state.

It may well be that one of the problems of the book is that the "hard facts" which emerge with such depressing clarity as the work proceeds are counter, in a sense, to the author's initial presuppositions. Myrdal is very sympathetic to planning, especially the "third world of planning," which is neither the cruel and ruthless austerity of the communists nor the futureless and undirected vision of laissez faire. As the book proceeds, however, it becomes clear that the mass of people in these countries are, in a notable phrase of the 1930s, "more planned against than planning" and that the "soft planning" (the phrase is mine, not Myrdal's) which is so characteristic of the region succeeds in bringing about the worst of all possible worlds. What planning has meant in these countries, especially in India, is, first, the use of the national budget for developmental public works and, second, a large array of "discretionary controls"—that is, quotas and licensing. It seems almost impossible to do anything in India without a license, which it is in the power of some government official to withhold. Under these circumstances, it is not surprising that corruption flourishes. Although all the evidence he has collected points to this conclusion, Myrdal is a little unwilling to state it explicitly.

Myrdal has also pointed out very effectively that artificially low interest rates coupled with quantitative restrictions are extremely unlikely to produce an optimum investment pattern. Yet nearly all these countries seem to have fallen into this trap. It is interesting to watch Myrdal being pushed by the logic of his facts toward a position much closer to that of Milton Friedman [the conservative economist from the University of Chicago] than he would like to admit!

Twenty-five years ago, in American Dilemma, Myrdal showed a remarkable capacity for telling the United States what it should have known, and in a way did know already; that where ideals and reality do not coincide, one or the other must give. Asian Drama has, in a sense, the same message for Asia: that the realities of the situation do not correspond to the ideals, the verbal pronouncements, and the

ostensible purpose of these societies. One hopes that the major result of this work will be a realistic reappraisal, however agonizing, of the total social dynamic of these societies by their elites. At the moment, their problems seem almost insoluble. It is precisely the kind of shock treatment which this work provides, however, that may release us from the world of fantasy which we have too long inhabited, and this may then change the dynamic toward a more hopeful future for these countries and for the world.

[Excerpted from "Asia: Soft States and Hard Facts," The New Republic. Washington (D. C.), Vol. 158, No. 18, 4 May 1968, pp. 25-28. Reprinted with permission.]

L. F. GOODSTADT, Assistant Editor, Far Eastern Economic Review.

Asia has been poisoned by an infection picked up in the West. The disease has fairly obvious symptoms—an excessive confidence in the ability of modern economic theories to transform backward nations, an infatuation with Western social and political ideologies, and an obsession with planning. To anyone who has to grapple with the facts of life of Asia's economies, this conclusion is inescapable. And yet, very often it seems that the lonely voices of pragmatism are buried under the weight of meaningless statistics and planning platitudes that are churned out by Asian governments and ECAFE economists.

Now, however, an academic economist of impeccable "liberal" record has launched a massive attack on the economic shibboleths that have been allowed to distort the pattern of development in the region for so long. What makes Professor Myrdal's book of special interest is that he himself played a leading role in propagating many of the ideas he now attacks—a fact he very readily acknowledges.

Asian Drama deserves to be read by anyone anxious for the progress and welfare of Asia, though it deliberately excludes Japan, Taiwan, South Korea, and Hong Kong—the "Chinese" (by culture and history) group of nations who have not allowed the planners and ideologists to take full control—and China. (This is unfortunate, because Professor Myrdal might have gained a great deal by testing his conclusions about "South Asia" against the policies and experience of the four "free" economies which have made a success of industrialization in Asia.) While the book as a whole does not represent a creative contribution to economic theory and many of Professor Myrdal's major theses have been more rigorously argued by other scholars, his is the first attempt to build up a comprehensive general critique of modern development economics.

Professor Myrdal has a few central ideas to which he constantly returns. The first of these is that economics is a group of theories which was worked out in the West and which is too slavishly applied in the very different Asian context. He believes that economic development in Asia will come from planning, but the logic and method of planning will have to be drastically reformed. He is convinced that economic progress is not just a matter of economic reforms but the total transformation of society, its attitudes and institutions. He argues that governments in the region are "soft," unwilling to insist on the discipline necessary to free their people from poverty; and that Asia has been blinded by prejudices and misconceptions which it has picked up from the West or created for itself. Perhaps the most recurrent of his themes is that it cannot be taken for granted that Asians are ready to grasp at every opportunity to foster economic progress; indeed, the opposition to the development process is very well entrenched. He is firmly wedded to the idea that it will only be possible to boost production when living standards are improved so that peasants are well-fed enough to improve their productivity and the proletariat healthy enough to become efficient.

The special virtue of Professor Myrdal's book is its attempt to be candid. He accuses the intellectuals of Asia of romancing about the masses and refusing to face up to the need to change popular attitudes. He strips away the illusion that it is the population explosion that has caused Asia's hunger.

He also questions the ability of Asian societies to guide their economic destinies through direct controls: "The structure on which South Asian countries are trying to build democratic planning is in general weak and inimical to development." The governments of Asia have failed to push through measures which would force their citizens to accept a set of community rules and obligations to speed up progress. Corruption saps the authority of administrations; in any case, civil servants are not paid to set off the kind of revolution against their own governments that an economic breakthrough demands. He attacks the façade erected around plans, with their "experts" and their "irrationally simplified economic models." He presses home the fact that the poor have not benefitted from the planning process in Asia.

Unfortunately, Professor Myrdal lacks the courage of his own rational convictions. He still clings to planning as the way out for Asia. Perhaps, in an academic sort of way, he is right: economics should be able to come up with rational theories that will explain, predict, and help to control the process of development. But the region cannot wait on the appearance of an Einstein to revolutionize economics. Perhaps Professor Myrdal is not in close enough contact with the region. Thus, his criticism of developments in Burma and Indonesia

is strangely muted. He praises Ceylon for its rice subsidies though these have come close to destroying the economic—and political—fabric of the nation. He adds that Ceylon "is the only nation in the region that has an effective district organization for public health." Yet 1968 saw a revival of malaria on the island for the first time since it was completely eradicated by DDT.

Willy-nilly, Professor Myrdal has set out the unanswerable case against planning. As he says, planning—except in the vaguest sense—cannot be accomplished without reliable data. And yet, as Professor Myrdal makes abundantly clear, Asia has not progressed beyond the "hunch" stage. He almost gives up the ghost on planning toward the end of the third volume. After a bitter attack on errors in the theories of planning, he confesses: "A bad guide is not necessarily better than none: bad guides not only mislead but also give false confidence." Truth slips from his grasp, however, and he returns to his quest for better theories.

Why is it that a man of Professor Myrdal's stature is unable to make the final leap? Did he miss his footing right at the start, where he laid down the value premises that he believed should be espoused in economic policies for Asia? These he calls the "modernization ideals," the goals that Asia's intellectual elite have set for themselves. First on his list is "rationality," then planning, followed by increased productivity and several others. "In one sense," he remarks, "all of the modernization ideals are contained in, and derived from, the ideal of rationality and planning." But in a region as impoverished as Asia, surely the first need—the only priority, in fact—must be to increase production.

The reality is that when a nation is poor, it cannot afford to take the moral stand that the desire for profits is bad and private enterprise must be restrained. Yet this is a view shared by several Asian governments. Paradoxically, as Professor Myrdal says of India: "Most officials have to devote most of their time and energy to limiting or stopping [private] enterprise. This is like driving a car with the accelerator pushed to the floor but the brakes on." More than this, such a state of affairs is outrageous for a region as backward as Asia.

Even if planning made sense from a logical and practical point of view, it would probably be the wrong prescription for Asia. Professor Myrdal emphasizes the fact that planning is an ideal whose attractions are confined to the elite and not shared by the masses. He states: "There can be no doubt that in the traditional setting of South Asian societies (excepting to an extent the Chinese) many people are 'survival-minded,' striving for nothing other than to preserve their customary low levels of living." One solution to this would be to

change traditional societies, but Professor Myrdal acknowledges the tenacity with which communities resist change. The other possibility is to bring the population to want more than mere survival. However, until Asian governments prove themselves worthy of their people's confidence in the economic sphere, the people will stick to the old and trusted tools and techniques of their forefathers. Enterprise will be kept to a minimum because, with bad administrations, its rewards are uncertain. By this time, even the most remote villages must have come to mistrust everything done in the name of a plan. The time has come to throw away the meaningless arithmetic of planning and substitute for it an equation that even the simplest can understand: effort on one side, reward on the other. This may delay the advent of social justice, but at least it will not compound hunger and disease, as the economists' planning has done. And in the long run, affluence has its own way of ensuring that social justice is enhanced.

[Excerpted from "How the Planners Failed Asia," Far Eastern Economic Review. Hong Kong, Vol. LX, No. 17, 25 April 1968, pp. 215-218.

SHAM LAL, Editor, The Times of India.

How long can you live on borrowed time and borrowed money? What will you do when the time comes to foot the bill? What will you do when you can't borrow any more? How will you look after your fast-growing family? How will you deal with the large army of idlers and those who do not have enough to eat? How can you put up with shirkers and with men who make a bad job of what little they do? How can you allow your parties to go on inflicting new wounds on the body politic even as the old wounds continue to fester?

Professor Myrdal is too gentle a person to speak so rudely to us. But the drift of what he says is clear enough. He is not angry. He is in despair. He sees our failure to cope with the crisis we face. Some time ago he might have put the blame on the rich nations for not giving us enough help. He still upbraids them for being niggardly. But he now regards our poverty as largely of our own making. He knows we are very short of capital. But then, we have so many idle young men. What have we done to mobilize them? We have miserably failed to put them to work. We have been far too easy-going.

But don't we know all this already? Professor Myrdal is not giving us any startling news. In fact we have all along said to ourselves, "We must do something to mobilize our people for work." Even as early as 1951—at the very time we embarked on the first Plan—we saw clearly what we had to do. "There are a variety of ways in which idle manpower and the spare hours of those partially employed can be canalized... in digging of canals, repair and renovation of tanks, construction of roads, bridges and bunds, in rural housing, in improvement of sanitation, in the imparting of elementary education.... The problem is essentially one of organization." But there is the rub. We have known all along we have to organize and drive ourselves hard. We just do not have the heart to do so.

We know we cannot create new wealth out of our hats and that we have to put extra hours on our jobs. We even realize that the new money incomes if the extra hours are paid for might exert too much pressure on available supplies. In fact we said to ourselves as long ago as 1951—again I quote from the first Plan document—"The accent in these first few years of development has to be on mobilization of idle manpower, with as little increase in money incomes as possible." Even Professor Myrdal could not improve on this recipe. But unfortunately this is not the sort of thing people lap up with a smile. And which politician, knowing that he has to go to them for their vote every now and then, can dare to force it down their throats? The planners sensed the difficulty in 1951 itself. And so they hastened to add a footnote to the recipe: to be administered on a strictly voluntary basis. Since few volunteers came forward, it was never administered.

Professor Myrdal is right when he says that the Western concept of employment "has little meaning in a society where, in the absence of a dole, the pressure of economic distress forces everyone to find some means of support, where the labor market is not fluid, where many persons of working age are disinclined to engage in physical labor, and where standards of work performance are very low." What holds down labor input and efficiency is not lack of capital but lack of stamina, ignorance, and the deadweight of tradition.

But who is to provide the stamina? Very often the tenant or the sharecropper is not even sure how long he is going to stay on the piece of land he tills, and he is afraid that the more he grows the greater will be the rent he will have to pay. So he does not put his heart into his work, much less invest in the land he tills. Professor Myrdal is not the first man to say that absentee landlordism must go. The planners have said it for eighteen years. But no party has been able to muster the will to define "personal cultivation" in a way which will make it impossible for absentee landlords to resume land only to lease it out to tenants or sharecroppers.

Professor Myrdal is a radical. But out of sheer frustration he concludes that radical land redistribution, however desirable, is not politically feasible in South Asia today. So instead of paying lip-service to the slogan "land to the tiller," he tells us, we will do far better by making "a deliberate policy choice in favor of capitalist farming." Those who invest in land and make a good job of it must be allowed "to reap the rewards of their efforts." Absentee landlords must be penalized by heavy taxes. And non-farming non-residents must be barred by law from acquiring land. The government is, of course, too timid to admit in so many words that it has made such a policy choice. It is inhibited by all that it has said in the past. But a choice on these lines is already being made, particularly in areas where the new agricultural strategy is at work. For the first time, those who have money know that investment in agriculture, if made with care, can be more paying than in industry.

There is no need, in any case, for Professor Myrdal to reassure the West that India is not going Left. Everyone can see for himself by now that the country is neither going Left nor proceeding to the Right but merely jogging along, now in this direction and now in that, depending on the balance of the conflicting pressures at the moment. The balance, as Professor Myrdal points out, is in nine cases out of ten for the course that calls for the least exertion. India is neither capitalist nor socialist; it is just "soft."

It is not surprising after this that even in fields where it knows that there are no soft options the Indian government is most reluctant to go the hard way. Professor Myrdal only begs the question when he says that a faster rate of development cannot be achieved without much more social discipline. The really pertinent question is why such discipline is not forthcoming.

This is the heart of the political dilemma facing the country. Political life, as it is organized today, rules out any kind of stern discipline. There are far too many small parties that have no stake in the present system, which gives them at best only a small share of the political prizes. Even when most of them join together to wrest power, their hold on it remains precarious because it is impossible for them—committed as they are to different policies—to work out a common program or implement it. As they know that they cannot hope to remain in power for long and so will not be called upon to fulfill their promises, they are tempted to raise extravagant hopes and make impossible demands.

Professor Myrdal almost despairs of the system. "Under the present South-East Asian conditions development cannot be achieved without much more social discipline," he writes, and adds that "an authoritarian regime may be better equipped to enforce social

discipline." But then even he is careful to point out that the existence of even such a regime "is no guarantee of this accomplishment."

It may be, as Professor Myrdal says, that "behind its impressive parliamentary façade, India is still far from being controlled by a majority of its people or even from having its policies devised so as to be in the interests of the masses." But then, under which system can one say with confidence that everything done by those in power is always in the interests of the masses? The question here, as in most democratic countries, is how to make the system more responsive to the true needs of the people. So far as India is concerned, the people will accept a far greater measure of discipline if the political parties do so. They have to put a curb on their greed and their petty rivalries and achieve some sort of consensus on issues which have a direct bearing on productivity and efficiency. Only when they do so and limit the area of political conflict will the open competition for power become meaningful. Until that happens there will be no escape from mushy thinking or mushy planning.

[Excerpted from "Soft Thinking, Soft Planning," The Times of India. Bombay, 12 March 1968, p. 6.]

RAYMOND J. SAULNIER, Professor of Economics, Barnard College.

Perhaps because it is easier for a theme to get lost in a million words than in a few thousand, and because Gunnar Myrdal's Asian Drama runs to well over two thousand pages, the principal mystery that confronts its reader is to discover what the author is trying most to say.

But the book has a theme, and it is an interesting and plausible one: Economic development in South Asia, and presumably elsewhere among the less developed countries, must be generated and achieved mainly from internal sources; help from the developed world, whether in the form of government grants and loans or imported private capital, while needed and welcome, can be only marginally important; what is really essential is to transform the attitudes of the people themselves and to reshape their indigenous institutions for more effective use of labor and other resources already available.

The second mystery is why it should have taken more than ten years of Professor Myrdal's time, a team of highly qualified assistants, and what appears to have been more than a quarter of a million dollars of financial support to come to a conclusion that most non-specialists have suspected all along. The answer, I suppose, is that no crust is so hard to break as the accepted wisdom of the established

professionals in a subject, which is precisely the task Mr. Myrdal sets for himself in most of his three volumes. Too much of the book, in this reader's opinion, is devoted to academic jousting, especially since a good part of the thinking that the author struggles so heroically to defeat has already been abandoned. But all's well that ends well and if the result is a victory for realism in economic studies, as I believe it will be, who can complain?

A large part of the text, innumerable footnotes, and most of the 16 appendices are designed to show that the "Western approach" to development problems has not been "adequate to reality."

It would be a grave mistake to interpret Professor Myrdal's results as altogether negative, though he doubtless recognizes the risk that they will be so regarded. The constructive way to interpret his prodigious work is to say that it provides a basis for a more realistic approach to the development problem. Looked at with this in mind, Mr. Myrdal's work has a good deal to offer, though it is difficult to use—policy suggestions are nowhere brought into a systematic arrangement—and is disappointing for the gaps it leaves unfilled.

The outstanding feature of his proposals is the importance attached to agriculture. Although no longer the case, there has been a tendency in the past to make the development process synonymous with industrialization. Not so with Professor Myrdal. To him, agriculture is the main element governing national levels of income and living, and therefore any hope for an improvement in welfare must turn mainly on the outlook for higher agricultural productivity. But agricultural productivity has been relatively stagnant. The trouble, in his view, is not a high density of population or a high man-land ratio, but a vicious cycle in which low living levels cause low productivity, which in turn yields low levels of living. Behind this unfortunate causal mechanism, says Mr. Myrdal, is the unfavorable effect of climate and "a social system of institutions and power relations... that is severely inimical to productivity...."

His suggestions for breaking the cycle include: A small plot of land for members of the landless lower strata; gradual abolition of sharecropping; a respectable place for agricultural workers, by weeding out of the economic system and out of the people's minds the traditional distaste for diligent manual work and, in particular, for work as a wage employee; agrarian reform focused on the way land is used rather than on the size of landholdings; and limitations on agricultural mechanization that has unfavorable labor-displacing effects.

The author concludes, however, that prospects for such a program—which he describes as a modified form of welfare capitalism

for agriculture—are far from bright. He seems to believe that it would be too radical for conservatives and too conservative for radical ideologists bent on a more far-reaching redistribution of land. Hopefully, this is a point on which he is wrong.

On industrialization as the road to development, Mr. Myrdal concludes that the level from which this process must begin in South Asia is so low, and the increase in population so rapid, that "even if [industry] grows at an extremely rapid rate [it] cannot absorb more than a small fraction of the natural increment in the labor force for decades ahead." He discounts the "spread effects" of the large-scale, Western-style manufacturing plants spotted throughout South Asia, which many Western economists (including this reviewer) have hoped and believed would multiply and in time absorb a significant part of the population in productive, well-paid factory jobs. Mr. Myrdal shares none of this optimism: "South Asian countries," he writes, "now run the risk of creating petty islands of highly organized Western-type industries that will remain surrounded by a sea of stagnation. If this fate is to be averted, industrialization must be so directed, and so complemented by policies in other fields, as to promote simultaneous development outside the sphere of modern large-scale industry." And by outside he clearly means mainly agriculture and small-scale craft industries.

Professor Myrdal turns out to be something of a heretic on foreign trade, too. It has been the conventional view that developing countries should try to finance capital-goods imports by building up their export industries. And it has been pretty widely accepted that such efforts had a fair chance for success. Mr. Myrdal sees little hope for export expansion because he believes world demand for the commodities that developing countries produce will grow only slowly, in large part because of technological advances in the West. He favors preferential tariff treatment for the exports of the developing countries—along the lines favored by the "Prebisch School" at United Nations conferences on trade and development—but his principal suggestion is to plan industrial development so as to reduce the reliance of developing countries on imports. But neither does he see much hope in this essentially autarchic solution, and thus what he says on foreign trade turns out in general to be negative.

Although the author has turned heretic on a good deal that has been orthodox in development planning, he remains strictly faithful to the view that there is only a limited role in less developed countries for private entrepreneruship. No one would quarrel with Professor Myrdal's major point—that attitudes and institutional arrangements are the principal obstacles blocking the road to growth. Anything his research does to clear the road will be all to the good. But what he does not see, is that part of what needs to be done to eliminate the

obstacles has to do with the attitudes of planners and their essentially doctrinaire opposition to private economic undertakings.

Actually, a larger role for private enterprise fits very well into the general cast and theory of Mr. Myrdal's study. It would perhaps be the ultimate heresy in development planning to make a particular point of encouraging and expanding the private sector, but the case for doing so is actually being made by events. Pakistan provides an interesting example of progress achieved where private effort is encouraged; Taiwan is a similar success story; and surely the most interesting and far-reaching event affecting the planning process in recent years is Eastern Europe's rediscovery of the market as a means for allocating resources and energizing individual effort.

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Two massive peaks of interpretative political economy tower over the arid, flat plain inhabited by the conventional modern economists who, lured on by the mirage of mathematical determinancy, undue generalization, illicit aggregation, and inadequately documented secular vistas, aspire to the status of scientists. The one is John Kenneth Galbraith's The New Industrial Society, about the industrialized, bulgingly opulent, yet increasingly self-frustrated societies of the West. The other is Asian Drama.

The incredible detailed knowledge assembled in the three volumes of Asian Drama by Myrdal and his international team of assistants will make the work a basic source not only for the study of that area, but for the whole field of economic development. In the Appendices, even more than in the main body of the text, if that is possible, we are given political economy at its best: the investigation, in their contemporary historical setting, of the economic and social factors which underlie the appalling situation in Asia resulting from the violent increase in population and poverty.

In the postwar period, Southeast Asia and the Indian subcontinent witnessed the sudden eclipse of that extraordinary phenomenon, the European—and in this century, the North Atlantic—domination, not only of this vast area, but of the globe itself. But the shaking off of the colonial yoke did not result in a basic change in socio-economic relationships in most liberated countries, especially in their rural

areas. In India the rajahs and zamindars were liquidated, but generally the smaller rural landlords, who were even greater exploiters and obstacles to development, were not eliminated. The frustration of genuine revolution in modern South and Southeast Asia has been, and remains, one of the most potent and hitherto unacknowledged causes of the failure of their social and economic development.

Land tenure problems and poverty itself between them create the vicious circle of self-perpetuating misery. In areas where the larger peasant holdings could develop, as in the Punjab, great advances have been made in increasing the marketable surplus, intensifying cultivation, and developing the use of modern agricultural techniques. Unfortunately, the organic interrelationships within economic development programs do not permit the piecemeal introduction of such changes. We must plan for balanced growth, rather than rely on the operation of unbalanced spurts of development, which were responsible for the prosperity of the United States and Western Europe.

In Volume II, Myrdal takes up the theme of labor utilization, which he has pursued already in a volume edited in honor of Professor P. C. Mahalanobis, and his somber reflections are continued in a discussion of the population problem. He finally turns to what is, of necessity, the basis for better and fuller labor utilization, namely the improvement in the quality of manpower through education and health. The easy and foolish optimism of the middle 'forties and early 'fifties which hoped to solve labor utilization by increased investment, is swept away in a meticulous analysis.

Myrdal's pessimistic approach to the problem of deficient utilization of labor is surprising only so long as we fail to realize that his denial of the existence of disguised unemployment is a semantic rather than real objection to the conventional "modern" approach to the problem. He regards the vast numbers of underemployed in rural and even urban areas as incapable of being employed more intensively; and he argues that there is no labor which does not contribute <u>something</u> to total output, even if the average remuneration is higher than its contribution. The fact remains that the vast majority <u>could</u> represent a formidable work potential. I feel that, provided no facile conclusions are drawn, the approach which regards the tradition-bound rural masses as capable of being mobilized is politically right, even though the cost of mobilization may be heavy.

One might, perhaps, have wished that Myrdal had given greater emphasis to the population explosion as the most menacing single factor in underdeveloped countries. Its fatal impact is due to the sudden superimposition of the Western biochemical revolution on a completely unprepared social texture. It did not derive, as in Western Europe, from a steady improvement of nutrition, urban

development, and public health following organically on the development of productive forces. Consequently, it has exacerbated the insufficiency of traditional agriculture, caused a catastrophic deterioration of social relationships in rural areas, and now threatens to undermine living standards and the whole basis of political stability and social justice.

The "applied" part of Myrdal's monumental investigation is supported by no less than 16 theoretical appendices, comprising some 400 pages. Outstanding among them is the second, on the mechanics of underdevelopment, on which Paul P. Streeten (professor of economics at the University of Sussex) collaborated, and the third, on the relevance of the modern model-building-quasi-mathematical approach for planning in South Asia, which is entirely Streeten's. Both are major contributions in the methodology of economics, and they pitilessly expose the weaknesses of the mechanistic approach, which turns what is really an art and a historical system of analysis into inapplicable generalizations.

Gunnar Myrdal's work re-establishes a balance between the extremes of optimism that, provided aid is given and used to increase investment, a decisive economic advance can be achieved and more recent skepticism about the capacity of aid to help. Today voices are heard counseling against further aid, using the persuasive argument that absorptive capacity would thus be increased and the price mechanism allowed to work its wonders. This is to some extent a rationalization of the declining will to aid, but there is no doubt that the disappointing performance in some poor countries has strengthened the hands of the critics. Myrdal does not slur over the difficulties, such as political and social defects of Asian countries. On the other hand, neither does he countenance easy rationalization of the obvious temptation for the rich to wash their hands.

This work will be an indispensable quarry for all further reading on development. Scholars, having received benchmarks all round, will now better be able to devote themselves both to specific questions and to general discussion of policy measures in a given framework. For this alone, and for the ruthless honesty of his analysis, Gunnar Myrdal has earned the gratitude of both his colleagues and world political leaders.

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